BARRIER-FREE DESIGN GUIDE

705, 10808 - 99 Avenue, Edmonton, Alberta, Canada T5K 0G5 403/427-8265

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CORRECTION

THE TELEPHONE NUMBER FOR
BUILDING STANDARDS BRANCH IS

427-8265

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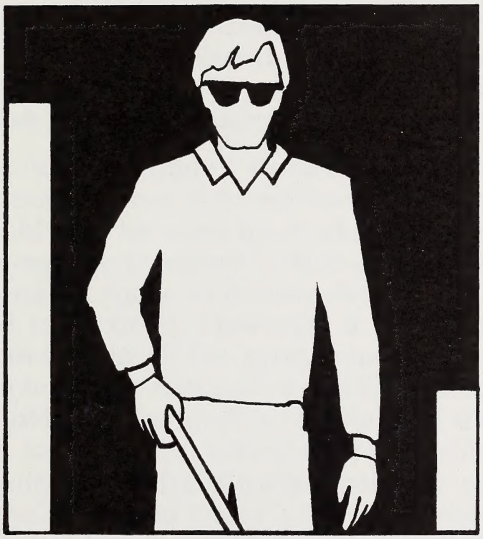

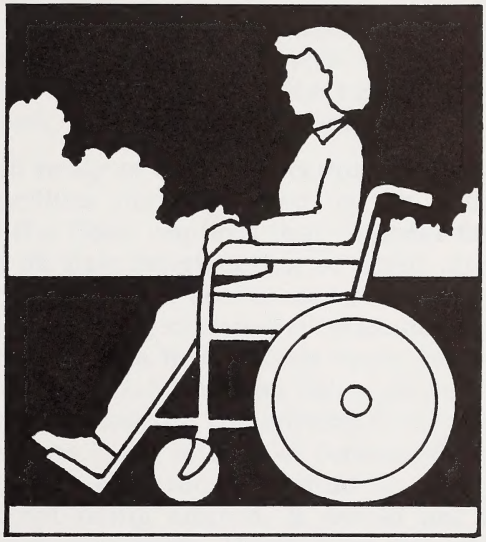

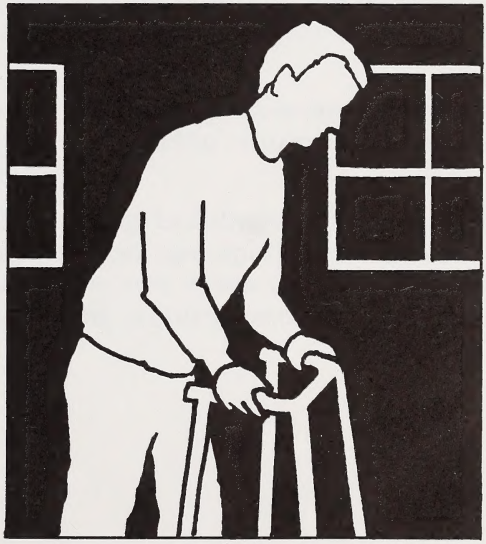

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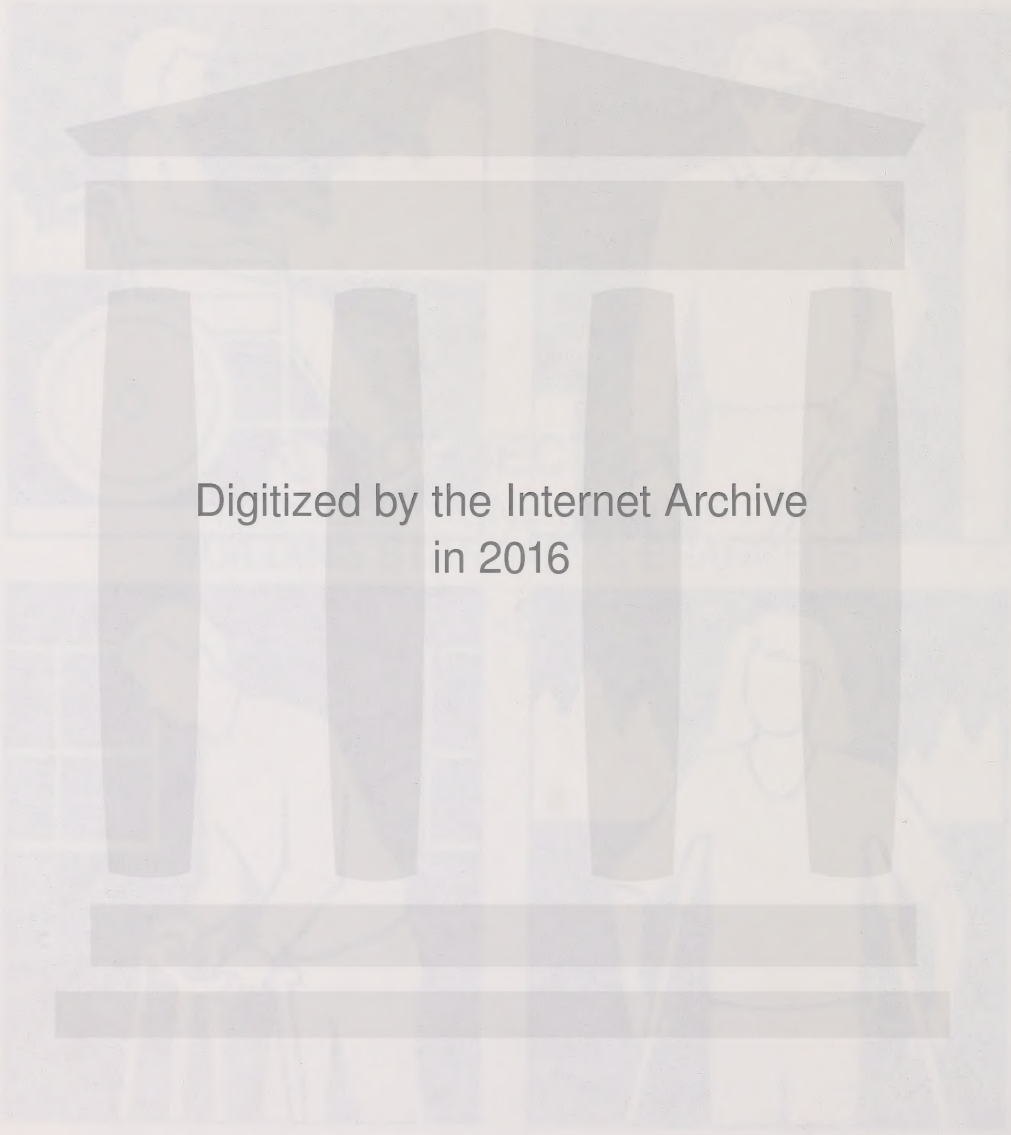

PREFACE

This manual has been prepared by the **Building Standards Branch of Alberta Labour** and the **Department's Committee for the Review of Building Standards for the Disabled Persons** to provide designers, builders and code users with a guide respecting the minimum building requirement for disabled persons in the Alberta Building Code 1985.

Extracts from the Building Code are followed with a brief explanation of each provision. Also, illustrations are provided to assist the designers, builders or Code users in understanding the intent of requirements and the needs of disabled persons in places where they live, work, visit or seek entertainment.

The Alberta Building Code outlines a broad range of building occupancy classifications where it is expected that the facilities normally used by the public would also be used by disabled persons. The Code requires that **"barrier-free access"** be provided to these facilities in all new construction or when alterations are made to the regulated parts of the facility or access routes leading to and from them. However, if a change in building occupancy classification occurs, then all the provisions for disabled persons in the Code apply to that building. For example, if the front entrance to a building was being altered, it should then be made to conform to the requirements of the current Code relative to entrances. Likewise, if a washroom was being altered or renovated, the requirements for disabled persons relative to washrooms should be met. If some regulated parts of a facility were not being altered, it would not be required to be upgraded to the barrier-free requirements. However on the other hand, if there is a change in occupancy classification of a building then all the provisions for disabled persons relative to that new occupancy classification would have to be met.

Except as explained for specific alterations or for a change in occupancy classification, there is no retroactive application of the specific requirements for disabled persons to existing buildings.

There are some cases, particularly with existing buildings, where specific requirements may be seen as unnecessary or there are specific extraordinary circumstances preventing conformance. In these two cases only, the Director may grant a relaxation from the application of the requirements in the Code.

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Acknowledgements

Alberta Building Standards Branch acknowledges and thanks the following individuals and organizations who have contributed in the preparation of this Barrier-Free Design Guide.

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Supplementary Information provided at the end of this guide are recommendations only, they are not required by the Alberta Building Code 1985.

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SECTION 3.7 BARRIER-FREE DESIGN

SUBSECTION 3.7.1. GENERAL

3.7.1.1 (1) The requirements of this Section apply to all **buildings** except

* (a) houses, including semi-detached, duplexes, triplexes, town houses, row houses, apartment buildings less than 4 storeys except as required by Sentence 3.7.1.4. (1), relocatable industrial accommodation and boarding houses; and

(b) **buildings** of Group F, Division 1 **major occupancy,** and

* (c) such other occupancies or areas within occupancies where, in the opinion of the authority having jurisdiction, persons in wheelchairs could not be reasonably expected access, such as automatic telephone exchanges, pumphouses and substations.

Barrier-free design applies to all buildings of new construction or applies to a specific alteration to an existing building where it is expected that the facilities would be used by disabled people.

Some smaller buildings such as single family dwellings, duplexes, townhouses, row houses, apartment buildings of not more than 3 storeys, buildings of high hazard industrial occupancy and buildings where disabled persons would not expect access are exempted from the barrier-free design requirements.

ACCESSIBLE ENTRANCE

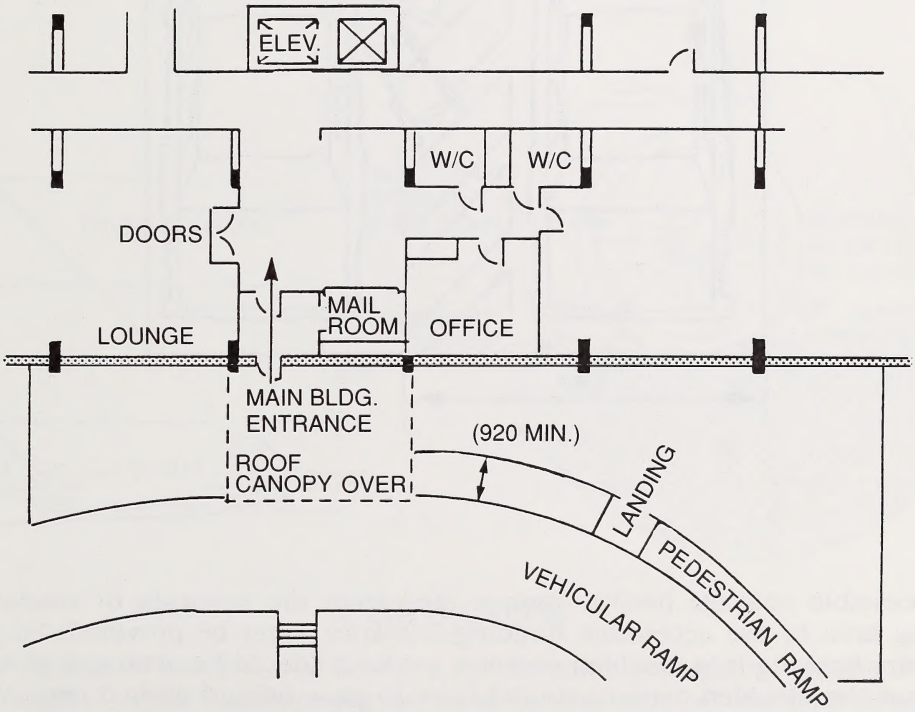
3.7.1.2. Every **building** in Article 3.7.1.1. shall have at least 1 entrance intended for general use by the public or the occupants designed in conformance with Article 3.7.3.3., opening to the outdoors at sidewalk level or to a ramp conforming to Article 3.7.3.4. leading to a sidewalk. (See Appendix A.)

Accessible entrance

Appendix Note

A-3.7.1.2. **Entrances.** An accessible route should exist from the sidewalk or roadway and parking area to an accessible building entrance. This route should be located so that disabled persons do not have to pass behind parked cars.

A barrier-free designed building must have at least one major entrance accessible to disabled persons. Whenever possible the same entrance should also be used by the general public.



TYPICAL BUILDING ENTRANCE

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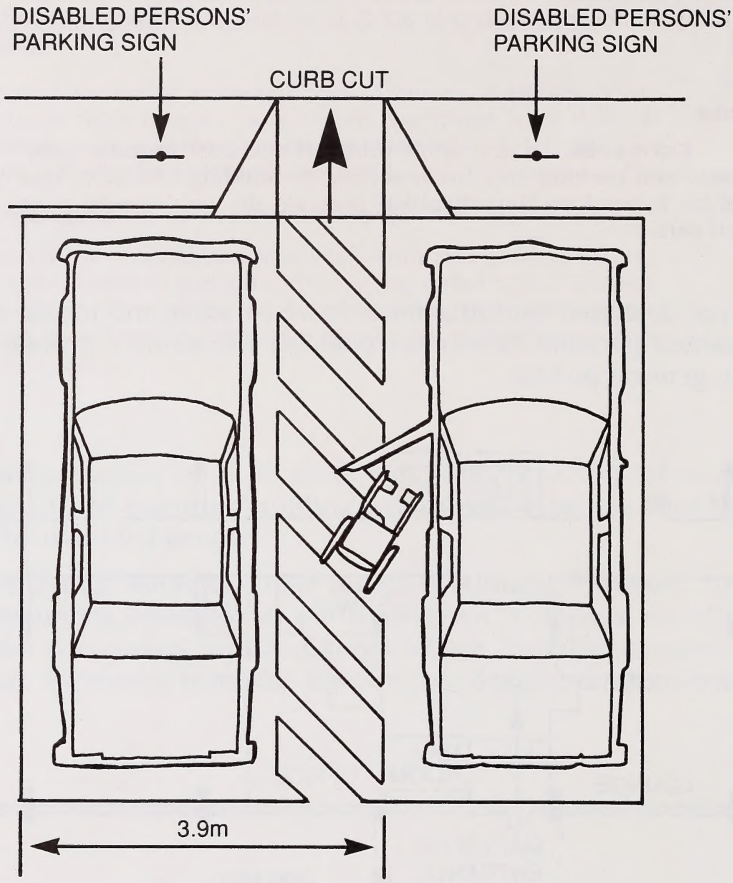
PARKING SPACES



An accessible passage (walks, ramps, etc.) from the sidewalk or roadway or parking area to the accessible building entrance must be provided. To eliminate cars backing into disabled persons, parking should be arranged in such a way that the disabled persons do not have to pass behind parked cars. Where curbs exist around parking areas it is essential to provide curb cuts.

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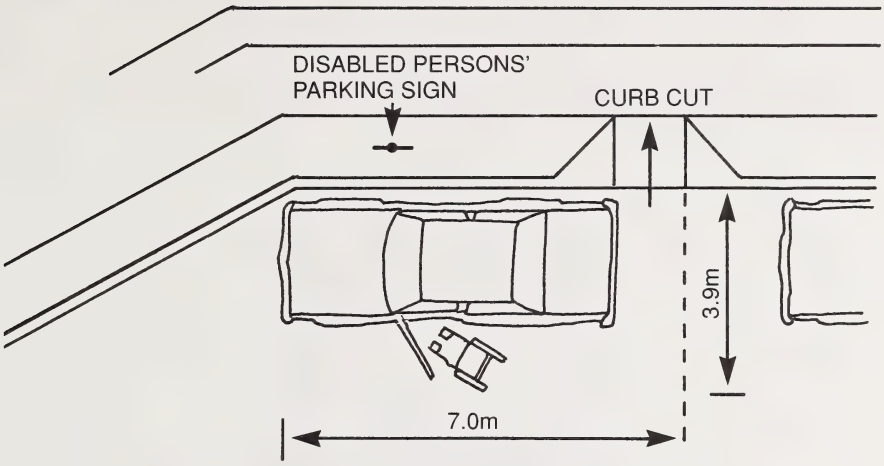
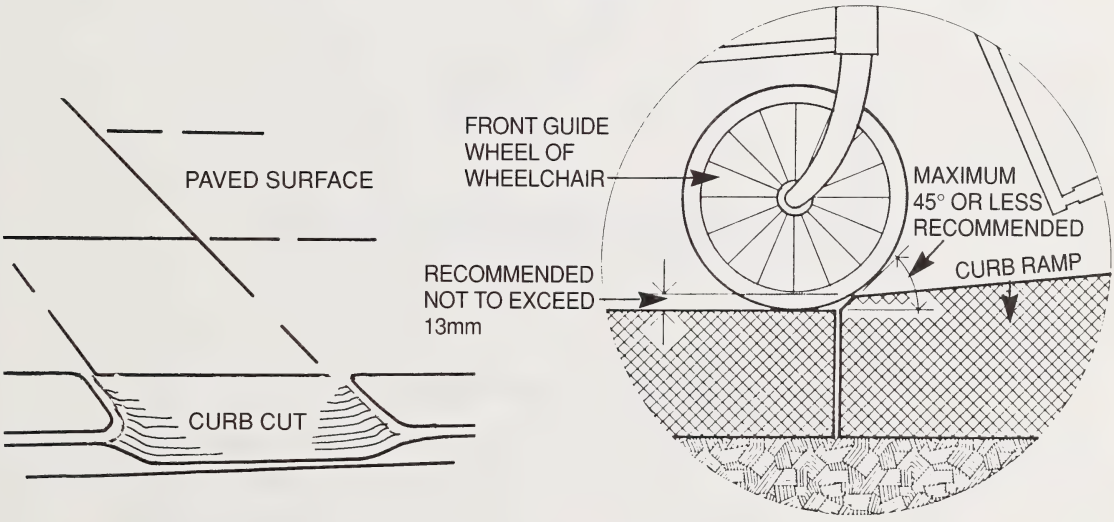
PARKING SPACES





CURB CUTS

Curb cuts can be more easily detected by the visually impaired people if there is a change of surface texture surrounding the ramp or between the ramp and the sidewalk.

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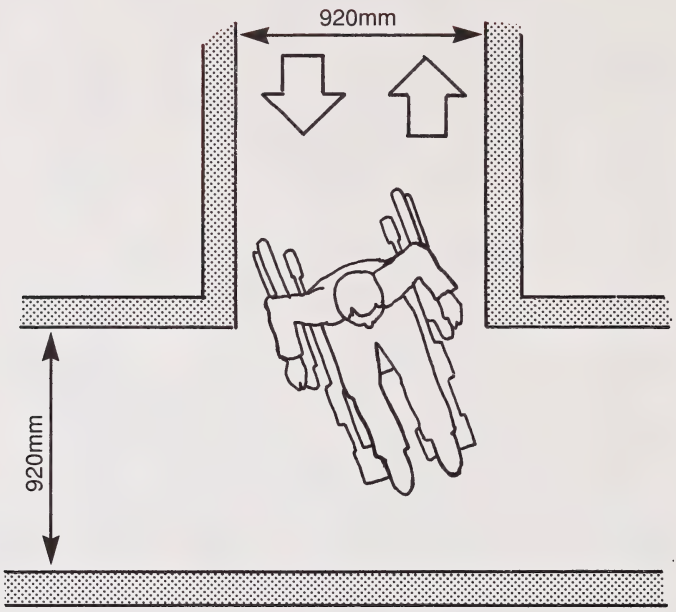
BARRIER-FREE ACCESS

Barrier-free access

3.7.1.3.(1) Except as permitted in Subsection 3.7.3., every **barrier-free access** shall provide an unobstructed width of at least 920 mm for the passage of wheelchairs.

3.7.1.3.(2) Floor surfaces along a **barrier-free access** shall have no opening that will permit the passage of a sphere larger than 13 mm diam.



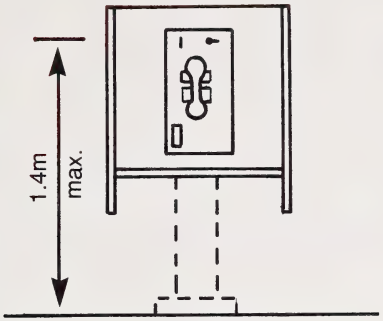
UNOBSTRUCTED WIDTH

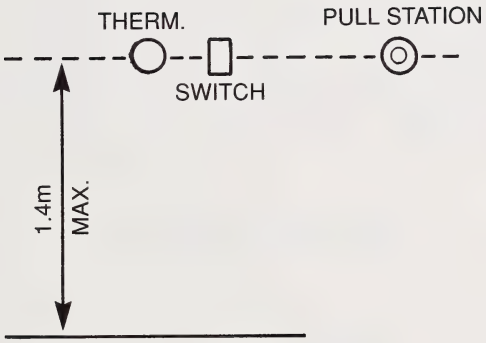
The minimum unobstructed width for a single wheelchair passage shall be 920 mm. This allows space for a wheelchair to maneuver and pedestrian traffic to flow.

Floor surfaces of walks, ramps, stairs and curb ramps in a barrier-free access shall be stable, firm and slip resistant, and if gratings are located in the access they shall not have any opening larger than 13 mm in one direction. If the gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

BUILDING CONTROLS

3.7.1.3. (3) Except as provided in Article 3.7.3.5., controls for the operation of **building** services or safety devices, located in a **barrier-free access** and intended to be operated by the occupant, including electrical switches, thermostats and intercom switches, shall be accessible to a person in a wheelchair and shall be mounted at not more than 1.4 m above the floor.





MOUNTING HEIGHT FOR BUILDING CONTROLS

Pull stations, electric switches, thermostats, intercom switches, telephones or other controls for this operation of building services shall be accessible for a person in a wheelchair. In no case shall these controls be more than 1.4 m above the floor.

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RESIDENTIAL PROJECTS

* **3.7.1.4.(1)** If a residential **project** is funded in part or in whole by the Government of Alberta, a **project** of 25 **dwelling units** or over shall contain **dwelling units** designed for physically disabled in conformance with this Section.

* **3.7.1.4.(2)** The number of **dwelling units** for physically disabled persons to be provided in a **project** referred to in Sentence (1) shall be:

(a) 2 in a **project** of 25 to 50 **dwelling units;**
(b) 3 in a **project** of 51 to 100 **dwelling units;**
(c) 4 in a **project** of 101 to 200 **dwelling units;**
(d) 5 in a **project** exceeding 200 **dwelling units.**

* **3.7.1.5.(1)** The Director may grant relaxation of one or more of the requirements of this Section if an **owner** can demonstrate to the satisfaction of the Director that

(a) the specific requirements are unnecessary, of
(b) extraordinary circumstances prevent conformance.

In housing projects which have Provincial government funding, a specific proportion of the dwelling units must be specially designed for disabled persons.

In circumstances where the nature of the building use clearly indicates that the facilities would not be used by disabled persons, or in cases of major renovations to existing buildings in which flights of stairs, lack of elevators, etc. could not be modified except at excessive cost, the Director may grant relaxations on a particular project.

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BARRIER-FREE ACCESS

SUBSECTION 3.7.2. OCCUPANCY REQUIREMENTS

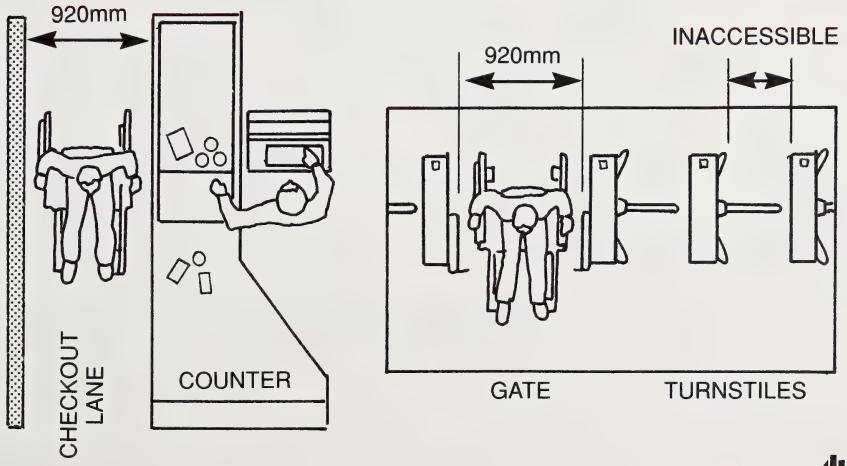
Areas requiring barrier-free access

3.7.2.1.(1) A **barrier-free access** shall be provided on the entrance **storey** and on each **storey** served by a passenger type elevator or other platform equipped passenger elevating device from the entrance described in Article 3.7.1.2.

(a) into each **suite,**
(b) into rooms or areas that serve the public or are designated for use by visitors, including areas in **assembly occupancies** with fixed seats, display areas and merchandising departments,
(c) into rooms or areas for student use in **assembly occupancies,**
(d) into general work areas, including office areas,
(e) into general use or general service areas, including shared laundry areas in **residential occupancies,** recreational areas, cafeteria, lounge rooms, lunch rooms and infirmaries,
(f) into patient rooms,
(g) into at least 1 passenger type elevator or elevating device conforming to Article 3.7.3.5.,
(h) into washrooms described in Article 3.7.2.3.,
(i) to any facility required by this Section to be designed to accommodate disabled persons,
(j) onto every balcony provided in conformance with Sentence 3.3.1.5.(1), and
(k) to ticket counters, refreshment stands, drinking fountains, public telephones and checkout counters (see Appendix A).

(See Article 3.3.1.5. for additional requirements for **floor areas** above the **first storey** with **barrier-free access**.)

PASSAGEWAYS



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BARRIER-FREE ACCESS

The barrier-free access is to be provided into suites, or rooms, but not necessarily all throughout the whole suite area, or rooms. Barrier-free access is to be provided to fitting rooms in clothing sales areas (department stores, etc.), changing rooms or lockers in a swimming pool or other recreation facilities.

In general, access is required to areas the public would use or where an individual with disability may work and to facilities the public or workers may use.

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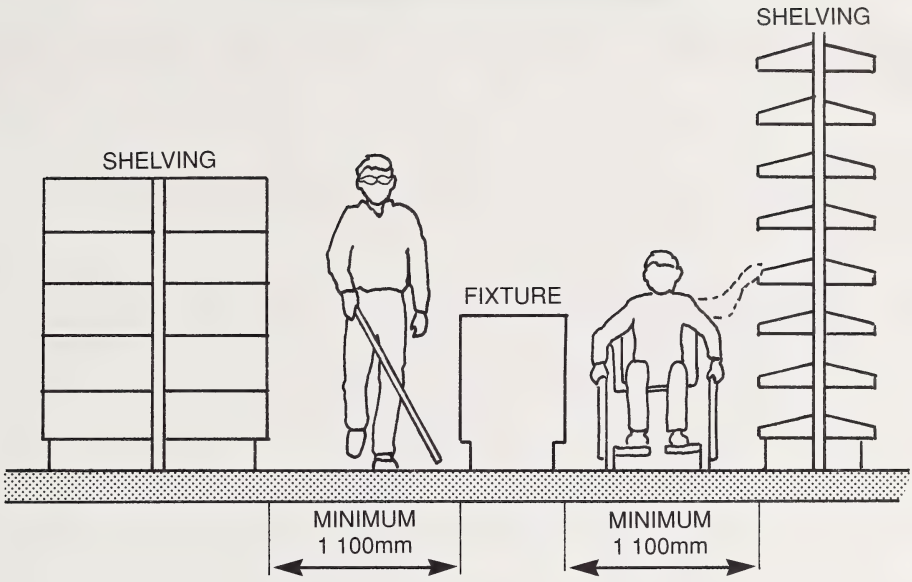
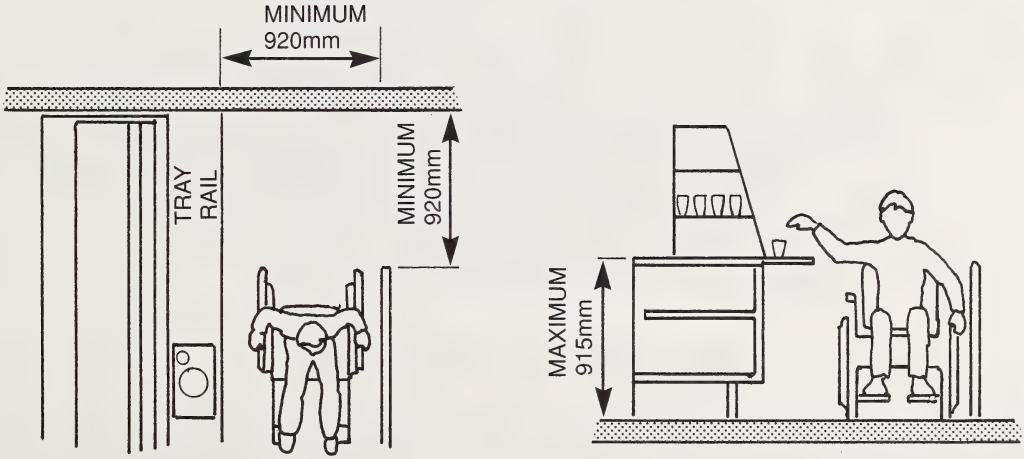


AISLES



RESTAURANTS

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WHEELCHAIR SEATING

* **3.7.2.1.(2)** The number of spaces designed for wheelchair use in Clause 3.7.2.1.(1)(b) shall be one space for every 125 seats. (See Appendix A)

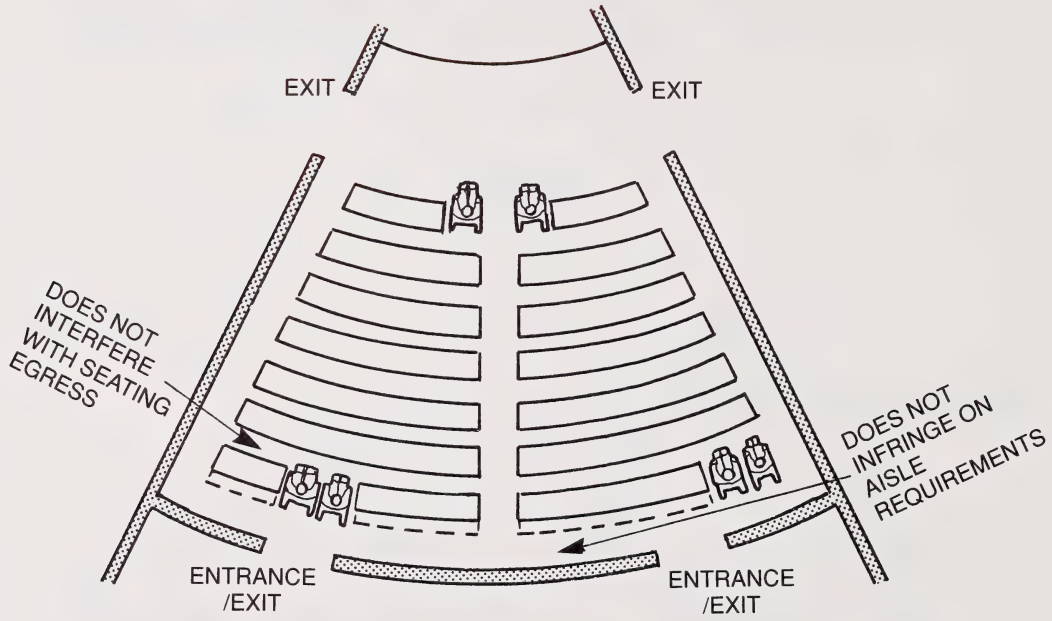
Wheelchair space in seating areas

Appendix Note

A-3.7.2.1.(1) Access into Rooms. Where barrier free access is required into suites or rooms in Subsection 3.7.2., it is not intended that such access be provided throughout each room or suite.

A-3.7.2.1.(1)(k)Access to Facilities. It is not intended that all facilities be accessible. It is intended that sufficient facilities be accessible to permit a reasonable use of the building.

A-3.7.2.1.(2) Fixed Seating. Seating areas for disabled persons should be scattered rather than located in one place so as to provide a choice of location for the users.



SEATING IN THEATRES

In assembly occupancies with fixed seats, one space designated for wheelchair use shall be provided for every 125 seats. These spaces should be scattered throughout the seating area to allow a choice of locations. Wheelchairs shall not infringe on exit routes or block access to exit routes.

ACCESS FROM PARKING

3.7.2.2.(1) A **barrier-free access** shall be provided from the entrance described in Article 3.7.1.2. to

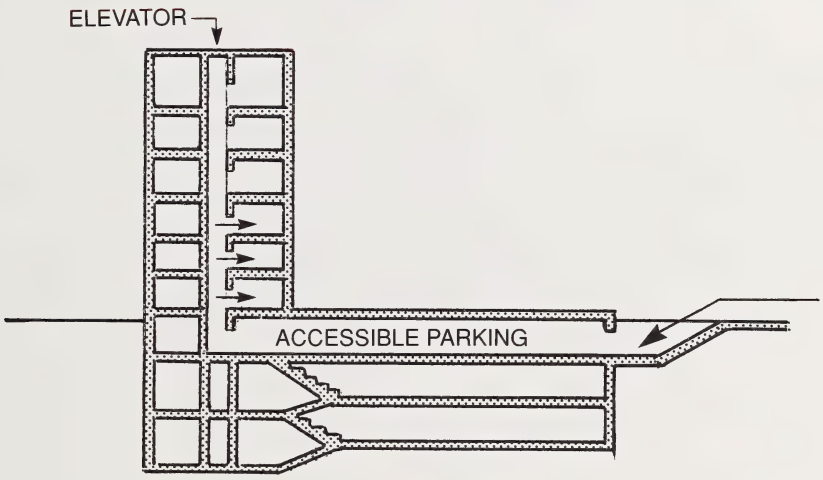
Access to parking areas

(a) an exterior parking area where exterior parking is provided (see Appendix A), and

(b) at least 1 parking level where a passenger elevator serves an indoor parking level.

Appendix Note

A-3.7.2.2.(1)(a) Access to Exterior Parking. It is not intended that a separate accessible entrance must be provided from the exterior parking area. The designer may choose to designate the entrance leading to the exterior parking area as the required entrance or provide a properly identified and unobstructed path of travel from the parking area to the entrance which is accessible. The entrance chosen should, in any case, be one normally used by the occupants of the building. Long paths of travel are not recommended.



There must be a barrier-free access from the barrier-free entrance to the parking area (where exterior parking is provided). Where a passenger elevator serves an indoor parking level, there must be a barrier-free access from the barrier-free entrance to at least one parking level.

Parking spaces designated for individuals with disability should be located as close to the elevator or accessible entrance to the building as possible. The accessible parking level should allow sufficient vertical clearance to accommodate the vehicles used by disabled drivers and passengers (min. 2745 mm)

Barrier-free access must be provided on the entrance storey and on each storey served by a passenger elevator, or equivalent.

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WASHROOMS

Washrooms for disabled persons

3.7.2.3.(1) Except as provided in Sentence (2), washrooms shall be designed to accommodate disabled persons in conformance with the appropriate requirements of Articles 3.7.3.6. to 3.7.3.9.

3.7.2.3.(2) Washrooms need not conform to the requirements in Sentence (1) provided

(a) they are located on a **floor area** to which **barrier-free access** is not provided,
(b) they are located within **suites** of **residential occupancy,** or
(c) other washrooms designed to accommodate disabled persons are available in locations providing equivalent convenience.

Washrooms which are located on a floor area without barrier-free access, or which are located within suites of residential occupancy need not be designed to accommodate disabled persons. Also, washrooms need not be designed for disabled persons if other washrooms that are designed for disabled persons are available in locations which give equivalent convenience.

Otherwise, washrooms shall be designed to accommodate disabled persons as per the design details specified in the building code.

Washrooms designed to accommodate disabled persons should be located in such a way that the disabled persons do not have to travel significantly longer distances from any location within the building than the average user.

Washroom accessories such as paper towel dispensers, soap containers, refuse containers should be situated so as not to create a mobility hazard for visually impaired persons (not project into path of travel).

SUBSECTION 3.7.3. DESIGN STANDARDS

Accessibility signs

3.7.3.1.(1) Where a **building** is required to have an entrance to accommodate disabled persons, signs incorporating the international symbol of accessibility for disabled persons shall be installed where necessary to indicate the location of that entrance.

3.7.3.1.(2) Where a washroom, elevator or parking area is required to accommodate disabled persons, it shall be identified by a sign consisting of the international symbol of accessibility for disabled persons and such other graphic or written directions as are needed to indicate clearly the type of facility available. (See Appendix A).

Appendix Note

A-3.7.3.1. Signs. The official symbol, as shown below, indicates to disabled persons that they will have reasonable freedom of movement within the building to which it is attached. It usually has a blue background, but if, because of lighting conditions, it does not stand out, it can be set on a white background. An arrow can be added to either side or to the top or bottom to indicate direction or the location of an accessible space or facility.

In barrier-free designed buildings appropriate signs incorporating the international symbol of accessibility for disabled persons shall be installed to provide identification of, or direction to accessible entrances, viewing positions, refreshment facilities, washrooms, parking stalls and the level of a multiple parking structure containing parking stalls for disabled persons (with signs located at entrance, or entrances).

Where signs are used, their locations shall be such that they are readily visible by a person in a wheelchair, they should be easy to read, understood and have a glare-free surface.

Also they should use only Arabic numerals, have characters and symbols in colours that highly contrast with their backgrounds, and contain the International Symbol of Accessibility for Persons with Disabilities and any additional wording and symbols necessary to convey full understanding.

NOTE: Raised signs, symbols and letters are preferred.

ACCESSIBILITY SIGNS

Wording used on a sign should be concise. Directional guidance should be restricted to one instruction per sign and avoid confusion. Directional symbols, such as arrows, should be clear and sharp and should not be highly stylized.

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FLOOR NUMBERS

3.4.7.12.(18) Arabic numerals indicating the assigned floor number shall

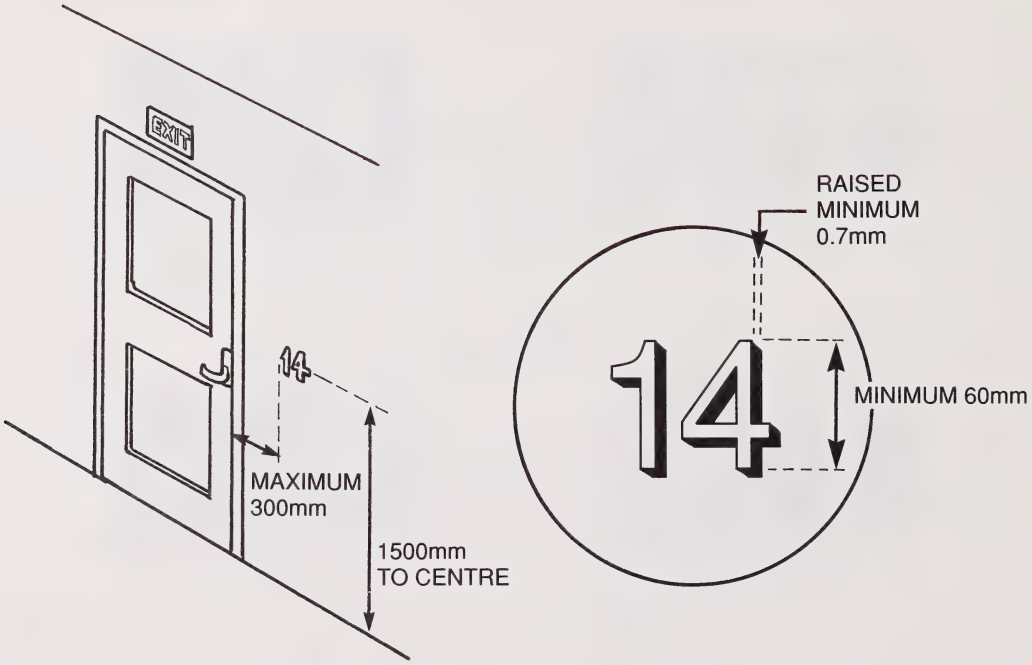
(a) be mounted permanently on the stair side of the wall at the latch side of doors to **exit** stair shafts,

(b) be at least 60 mm high, raised approximately 0.7 mm above the surface,

(c) be located 1 500 mm from the finished floor and not more than 300 mm from the door, and

(d) be contrasting in colour with the surface on which they are applied. (See Appendix A.)

A-3.4.7.12.(18)(d) Colour Contrast. The identification of floor and other signs intended to facilitate orientation for visually-impaired persons should offer maximum colour contrast to be effective. For this reason, it is recommended that white on black or black on white be used, as this combination produces the best legibility. It is also recommended that the sign surfaces be processed so as to prevent glare.



Assigned floor numbers shall have a glare-free surface and shall be mounted in contrasting colours so that visually-impaired persons can easily read them.

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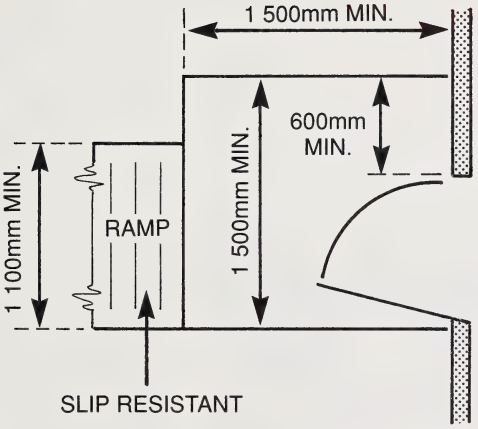
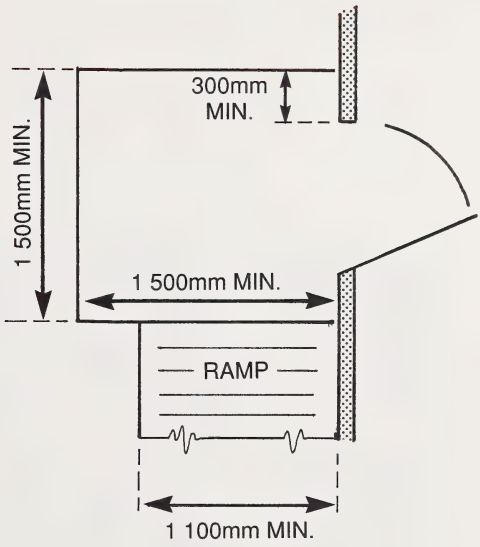
EXTERIOR WALKS, RAMPS

3.7.3.2.(1) Exterior walks that form part of a **barrier-free access** shall

(a) have a slip-resistant, continuous and even surface,
(b) be at least 1 100 mm in width, and
(c) have a level area adjacent to the entrance doorway conforming to Clause 3.7.3.4.(1)(c).

Exterior Walks





The exterior walks must be at least 1100 mm wide and a levelled area of at least 1.5 m by 1.5 m adjacent to the entrance doorway shall be provided.

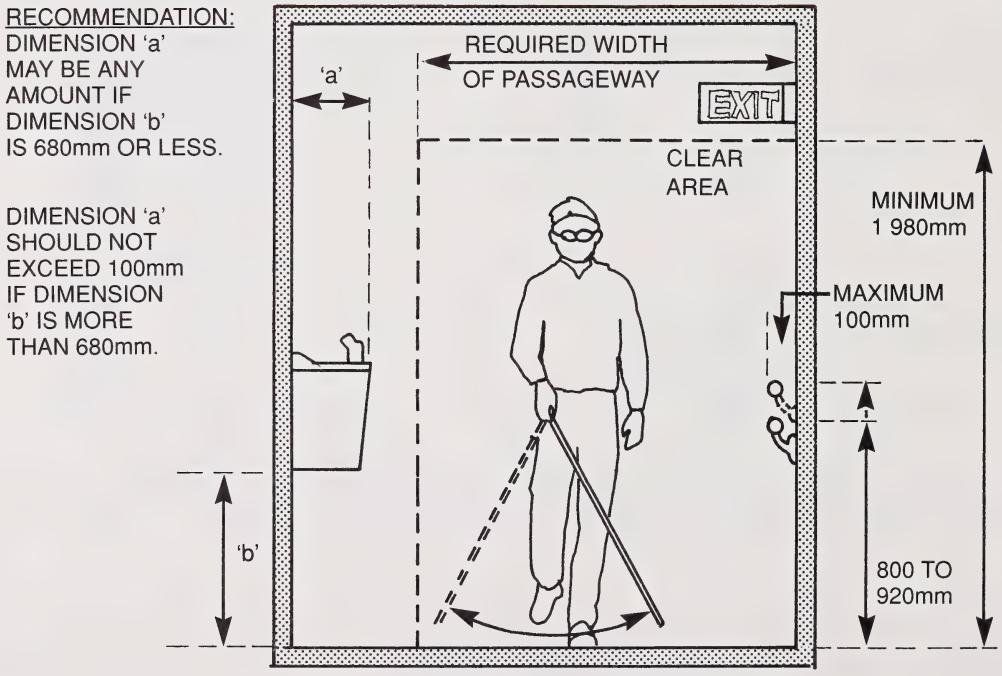
PATH OF TRAVEL

3.3.1.7.(3) Except as permitted in Sentence (4), obstructions located within 1 980 mm of the floor shall not project more than 100 mm horizontally into **exit** passageways, **public corridors,** corridors used by the public or corridors serving classrooms or patients' bedrooms in a manner that would create a hazard for visually impaired persons travelling adjacent to walls.

3.3.1.7.(4) The horizontal projection of an obstruction in Sentence (3) is permitted to exceed 100 mm where it extends to less than 680 mm above the floor. (See Appendix A.)

Appendix Note

A-3.3.1.7.(4) The sweep of a cane used by blind or visually impaired persons normally detects obstructions that are within 680 mm of the floor. Any obstruction above this height would not normally be detected and can, therefore, create a hazard if it projects more than 100 mm into the path of travel.



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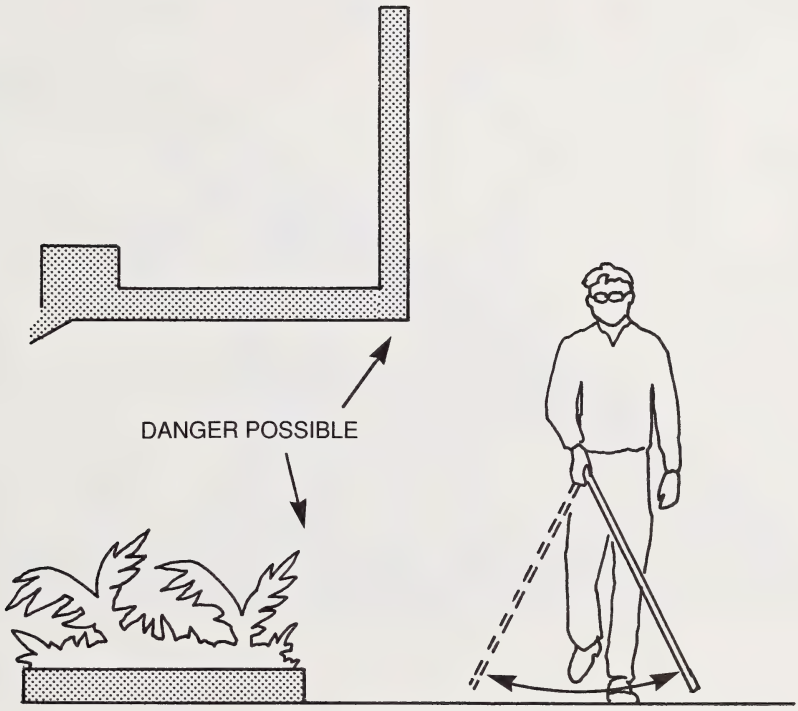
PATH OF TRAVEL

As the visually-impaired persons travel along the wall or rail, any projection or obstruction located within 1980 mm from the floor of a barrier-free access is not permitted.

However, if a projection is not more than 100 mm from the side wall (handrail) or extends below 680 mm from the floor (detectable with the help of a cane), it is acceptable.



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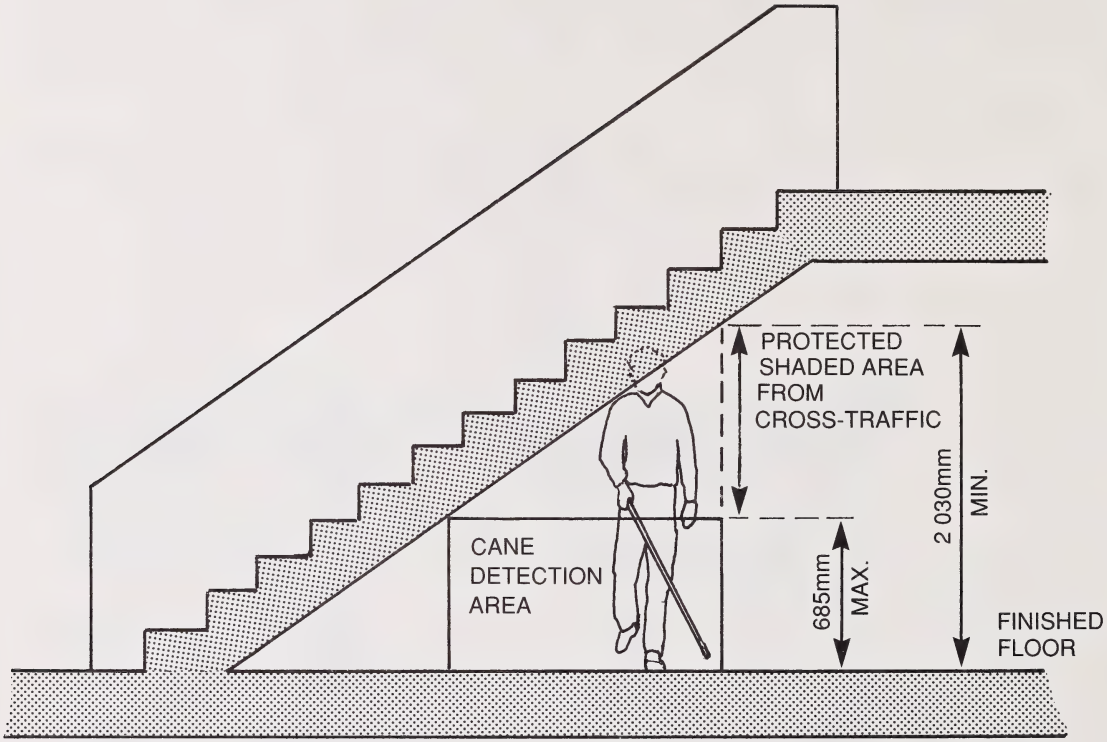
OVERHEAD HAZARDS



Walks, halls, corridors, passageways, aisles or other circulation spaces shall have 2030 mm minimum clear headroom. If vertical clearance of an area adjoining an accessible route is reduced to less than 2030 mm nominal dimension, a guardrail or other barrier having its leading edge at or below 685 mm above the finished floor shall be provided.

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CLEAR FLOOR SPACE

Doors in a barrier-free access

* **3.7.3.3.(1)** Every doorway that is located in a **barrier-free access** shall

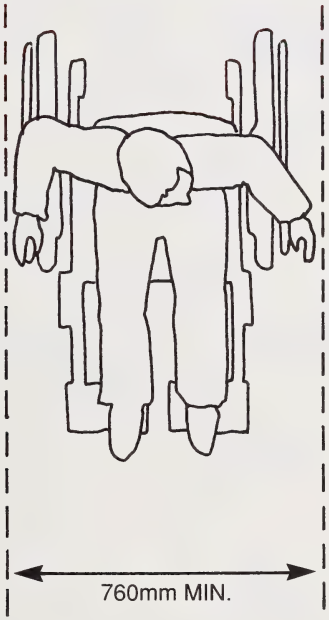
(a) have a clear width of at least 760 mm when the door is in the open position, and

(b) be openable with one hand.

3.7.3.3.(2) The doorway to at least 1 bathroom within a **suite** of **residential occupancy** shall have a clear width of at least 760 mm when the door is in the open position. (See Appendix A.)

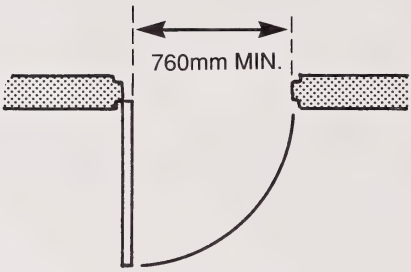
Appendix Note

A-3.7.3.3.(2) Residential Washrooms. Even though it is required to have doors to washrooms in residential suites large enough to permit the passage of wheelchairs, it does not mean that the washroom or its fixtures have to be designed to facilitate persons in wheelchairs.



Every doorway in a barrier-free access shall have a clear opening width of 760 mm and must be openable with one hand. This includes the doorway to at least one bathroom in a suite of residential occupancy.

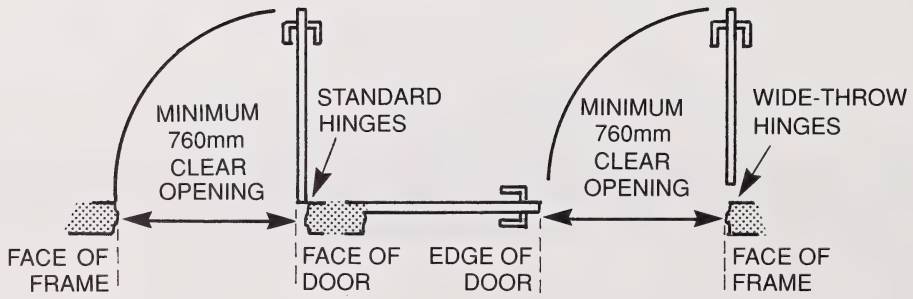
DOORS

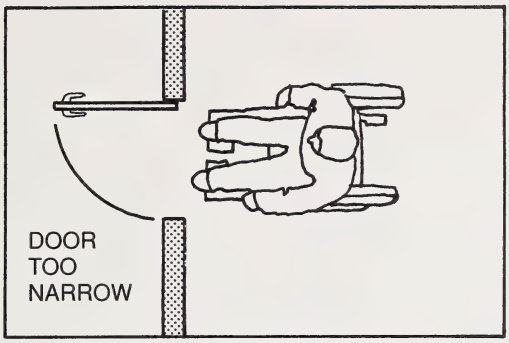


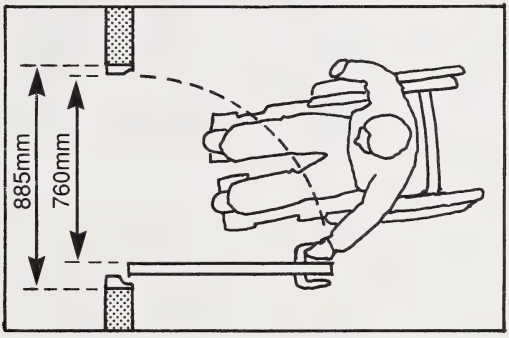
HINGED DOOR

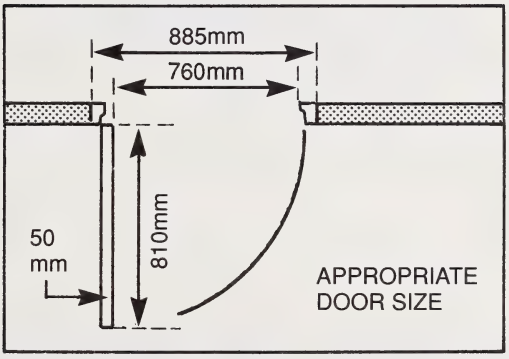
SLIDING DOOR

FOLDING DOOR



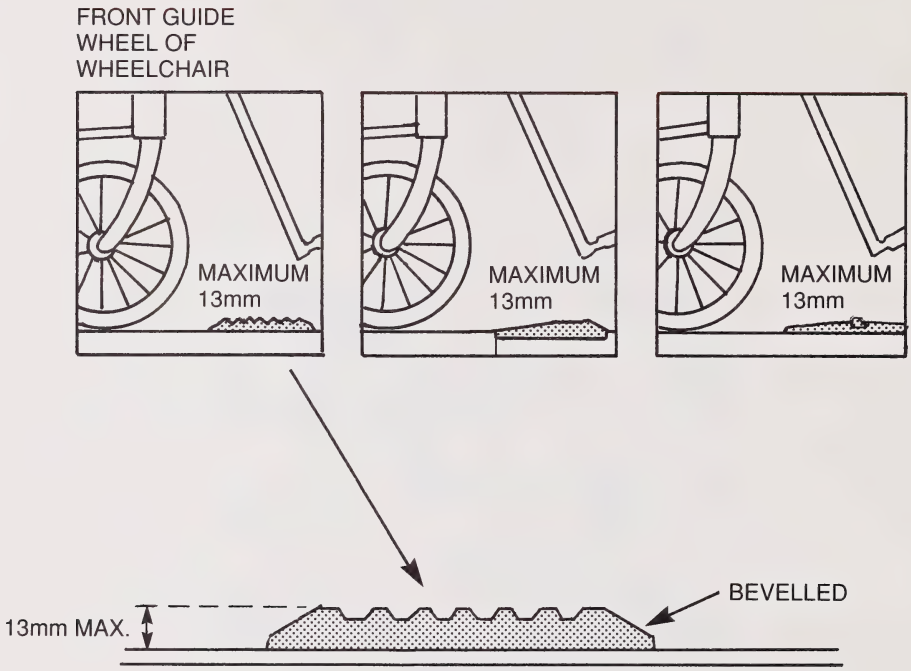

DOOR
TOO
NARROW


885mm
760mm


885mm
760mm
810mm
50
mm
APPROPRIATE
DOOR SIZE

THRESHOLD

3.7.3.3.(3) Thresholds for doorways in Sentence (1) and (2) shall not exceed 13 mm in height above the finished floor surface and shall be bevelled to facilitate the passage of wheelchairs.



For ease of wheelchair passage and to avoid tripping hazards for the visually impaired person, raised thresholds for doors should be avoided, but where they are necessary they shall not exceed 13 mm in height above the finished floor surface.

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DOOR CLOSERS

Door closers

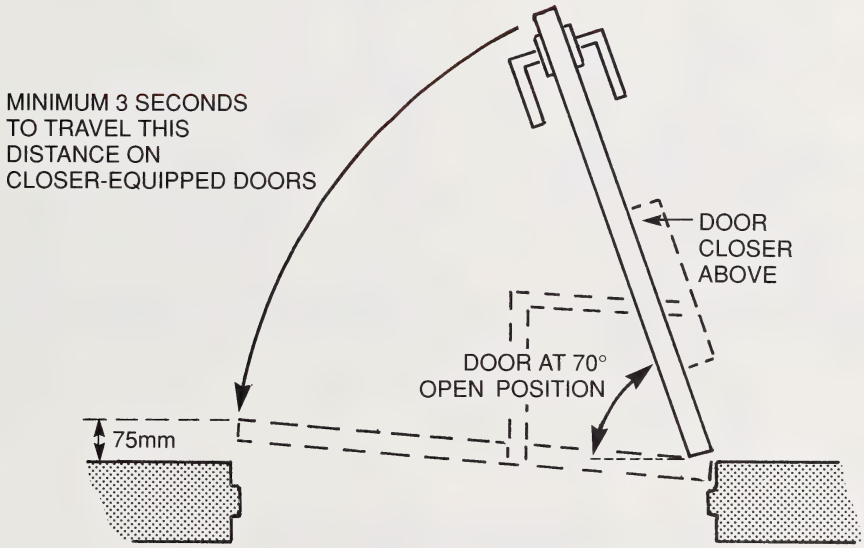
3.7.3.3.(4) Except for doors to **dwelling units,** door closers for doors in a **barrier-free access** shall be designed to permit

(a) doors to open when a force of not more than 38 N is applied to the handles, push plates or latch-releasing devices for exterior doors and not more than 22 N for interior doors, and

(b) interior doors to have a closing period of at least 3 s measured from the door in an open position of 70° to the doorway to a point 75 mm from the closed position measured from the leading edge of the latch side of the door. (See Appendix A.)

Appendix Note

A-3.7.3.3.(4)(a) For locations where greater pressures are required to assure proper building function an alternative solution such as automatic door openers, etc. should be used.



CLOSING TIME OF DOOR

Except for doors to dwelling units, door closers must permit opening with a force of 38 N or less for exterior doors and 22 N or less for interior doors.

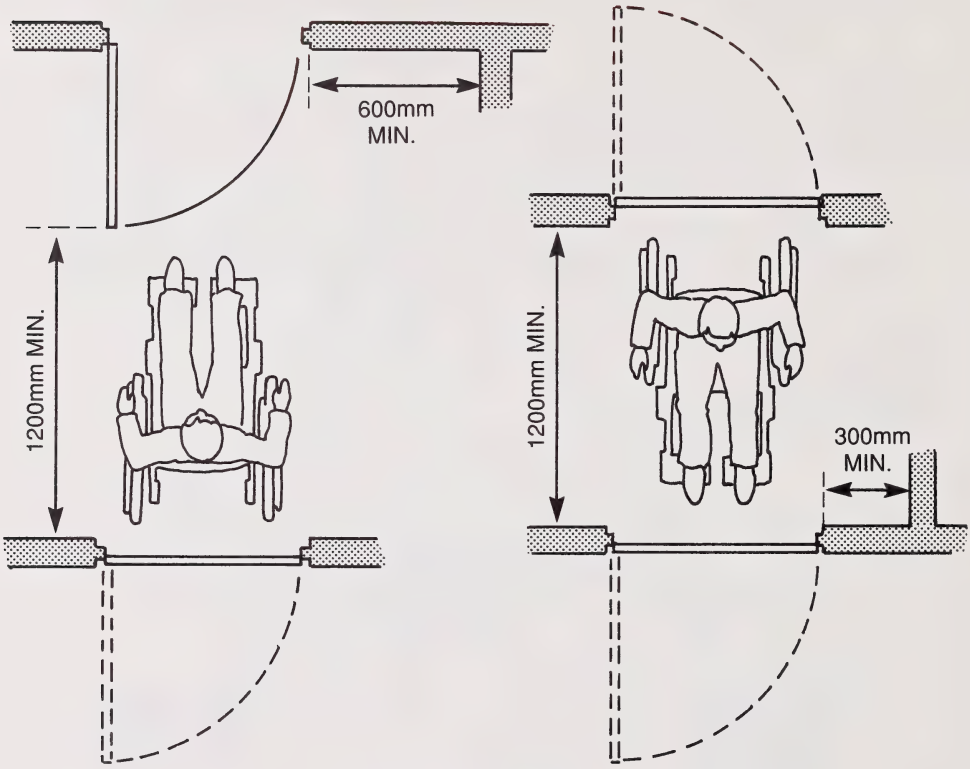
VESTIBULES

3.7.3.3.(5) Vestibules located in a **barrier-free access** shall be arranged to allow the movement of wheelchairs between doors and shall

Vestibules in a barrier-free access

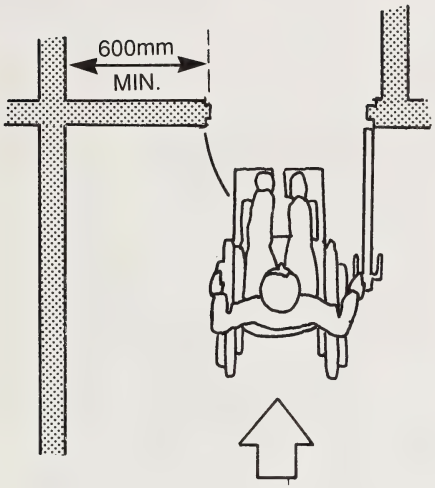
(a) provide a distance between 2 doors in series of at least 1.2 m plus the width of any door that swings into the space in the path of travel from one door to another, and

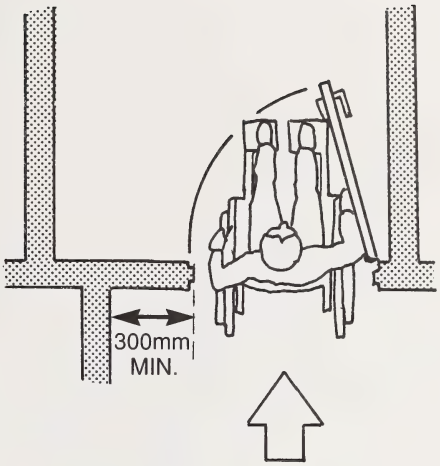
(b) have a clear space, beyond the latch side of each door, of at least 600 mm when the door swings into the vestibule and at least 300 mm when the door swings away from the vestibule (see A-3.7.3.4.(1)(c) in Appendix A).

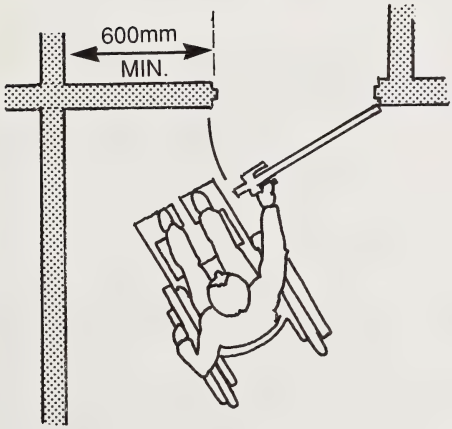


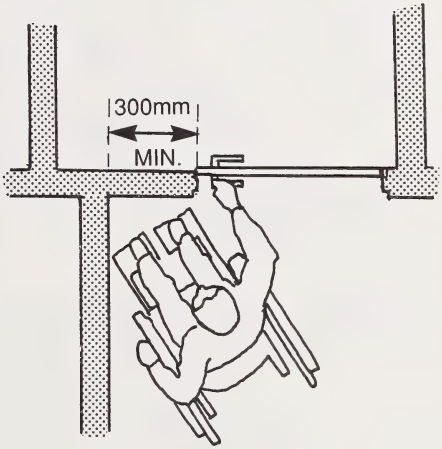
VESTIBULES

For a person using a wheelchair to open a door, sufficient unobstructed space is required at the latch side of the door. If the door swings towards the wheelchair (PULL), then at least 600 mm clear space is required and if the door swings away from the wheelchair (PUSH) then at least 300 mm clear space is required.









UNOBSTRUCTED SPACE

For persons with impaired hand functions, knob handles do not provide an adequate grip, and it is recommended that on doors which are latched, lever handles be used.

NOTE: Identification of entrances for visually impaired should be done by using contrasting colors in door frames, handles, etc.

RAMPS

Ramps in a barrier-free access

3.7.3.4.(1) Ramps located in a **barrier-free access** shall

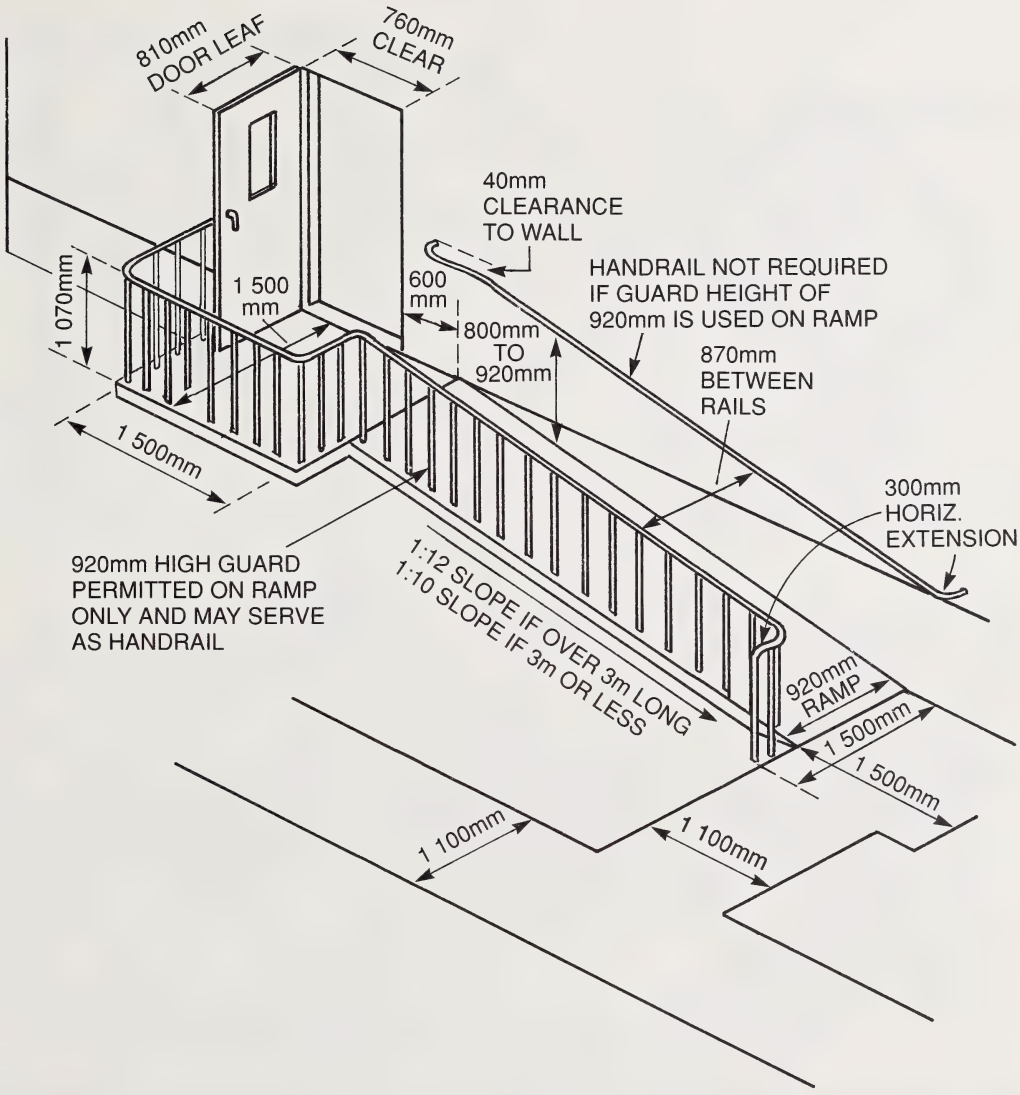
(a) have a minimum width of 870 mm between handrails,
(b) have a maximum gradient of 1 in 12, except that a gradient not exceeding 1 in 10 is permitted where the length of ramp does not exceed 3 m,
(c) have a level area of at least 1.5 m by 1.5 m at the top and bottom and at intermediate levels of a ramp leading to a door, so that the level area extends at least 600 mm beyond the latch side of the door opening, except that where the door opens away from the ramp, the area extending beyond the latch side of the door opening may be reduced to 300 mm (see Appendix A).
(d) have a level area at least 1.2 m long and at least the same width as the ramp
    (i) at intervals of not more than 9 m along its length, and
    (ii) where there is an abrupt change in the direction of the ramp,
(e) be equipped with handrails and **guards** conforming to Articles 3.4.7.5. and 3.4.7.6.,
(f) have a slip-resistant, continuous and even surface, and
(g) have walls, railings or other barriers that extend to within 75 mm of the finished ramp surface or a 75 mm of the finished ramp surface or a 75 mm high curb.

3.7.3.4.(2) Floor or walks in a **barrier-free access** having a slope steeper than 1 in 20 shall be designed as ramps.

Any part of a path which has a slope steeper than 1 in 20 in a barrier free access is considered a ramp.

Ramps in a barrier-free access shall have a minimum unobstructed width of 870 mm, maximum slope of 1 in 12, but a slope of 1 in 10 is acceptable provided the length of the ramp is not more than 3 m.

A level landing of at least 1.5 m by 1.5 m is necessary at the bottom and top ends of the ramps. Intermediate landings shall be provided at intervals of not more than 9 m for the disabled persons to slow down or stop and rest if necessary. These landings should be at least 1.5 m by 1.5 m if leading to a door otherwise, a minimum of 1.2 m by width of the ramp is acceptable.



RAMP IN A BARRIER FREE ACCESS

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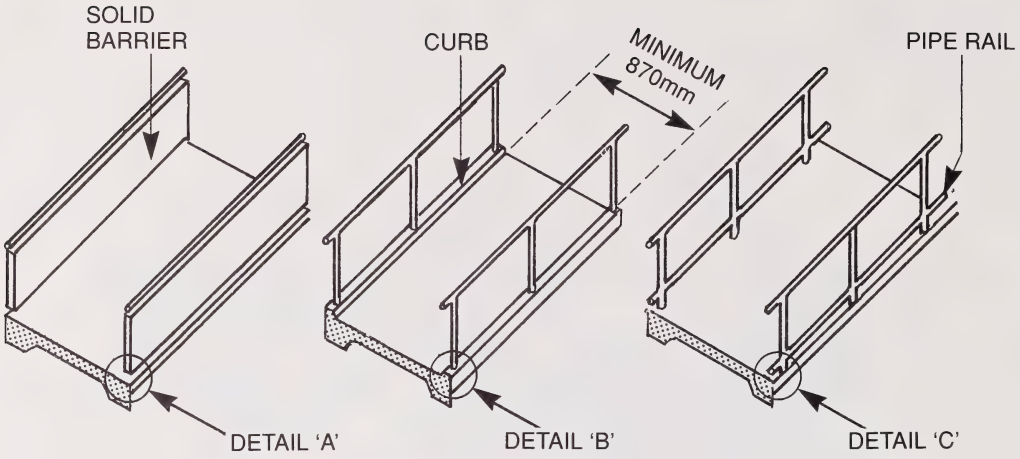
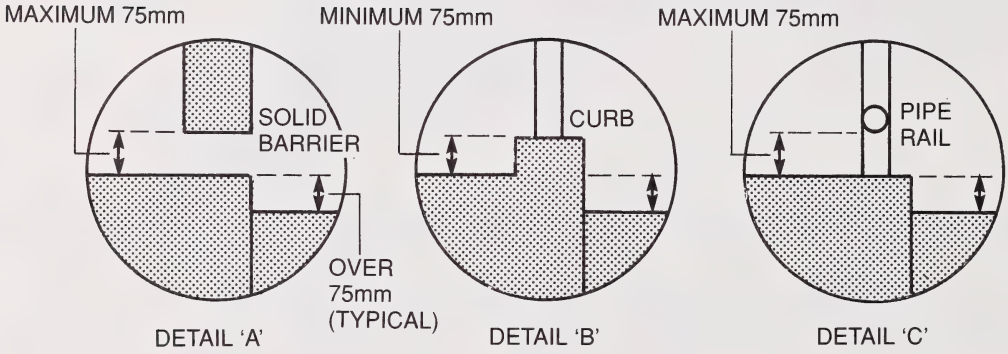


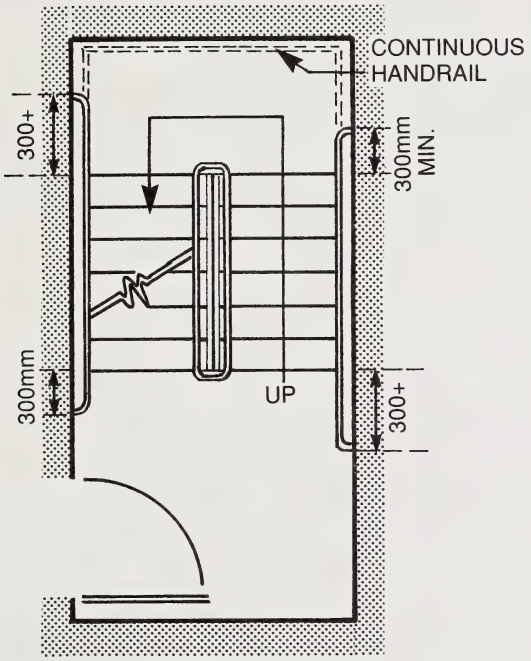


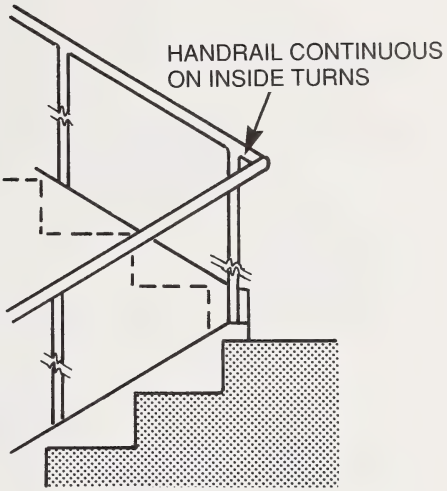
PROTECTION AT SIDES OF RAMPS

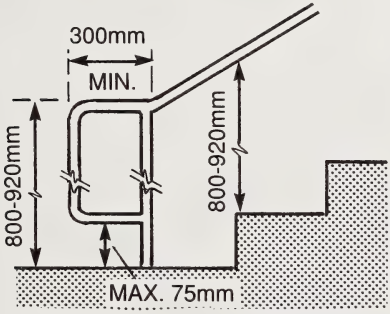
The ramps must be equipped with handrails and guards so that persons in wheelchairs can pull themselves up with the help of handrails. A combined guard and handrail can be used if the height is 920 mm.

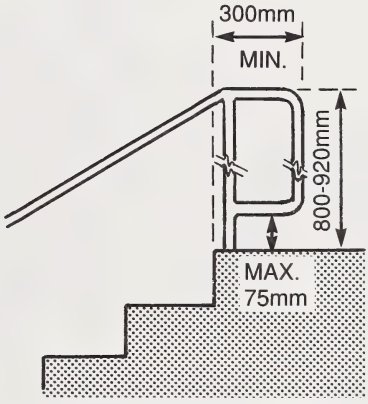
To prevent wheelchairs from accidentally going over the edge of the ramp, walls, railings or other barriers must be provided.

GUARDS AND HANDRAILS









Blind or visually-impaired persons rely on handrails to guide them on stairways. A continuous handrail will assist them in negotiating stairs at changes in direction. The extended handrail is useful to persons with physical limitations to steady themselves before using the stairs. Handrails should, however, return to the wall, floor or post, so as not to constitute a hazard to blind or visually-impaired persons.

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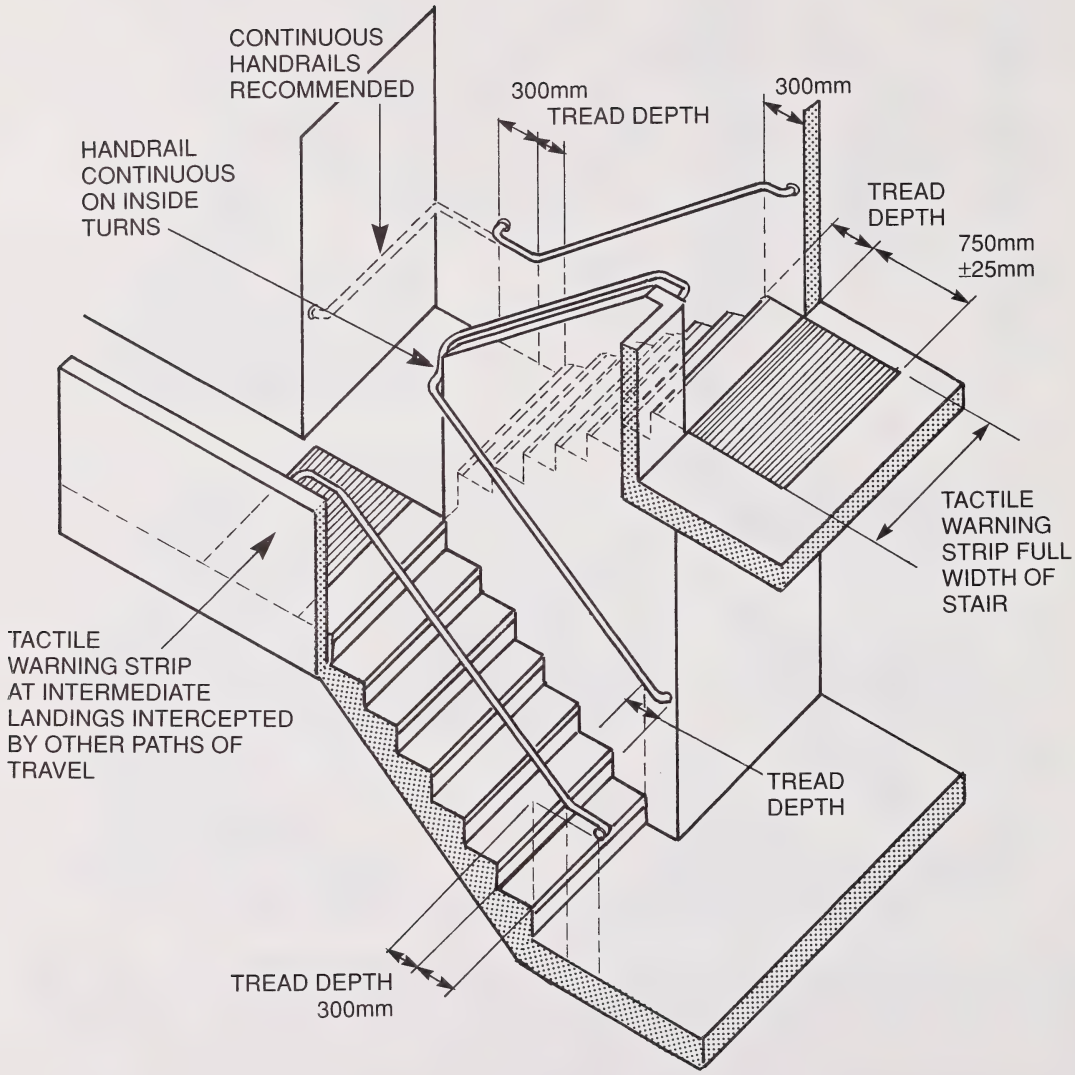
TYPICAL STAIRCASE



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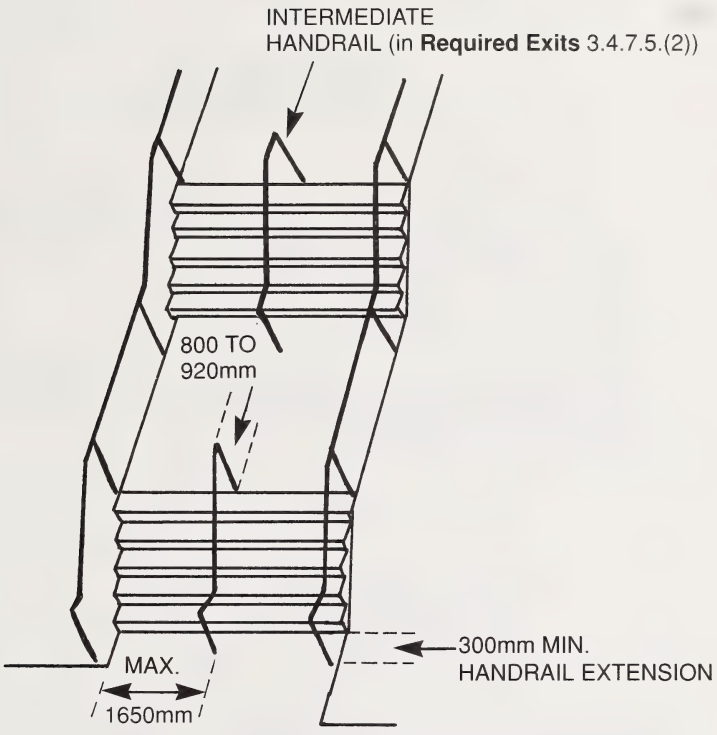
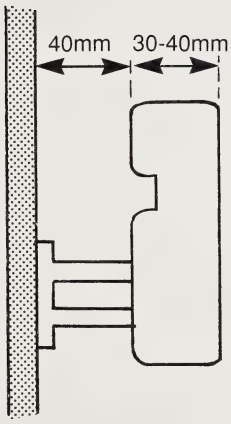
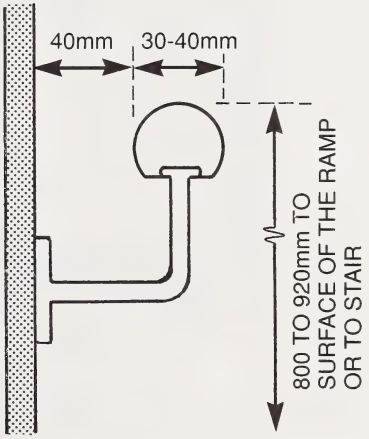
STAIR







HANDRAILS

Handrails should be at a height of between 800 mm and 920 mm from the finished floor. The rail should be easy to grip, having circular section with diameter of approximately 40 mm. For a good grip there shall be a minimum 40 mm clearance between the rail and the wall.

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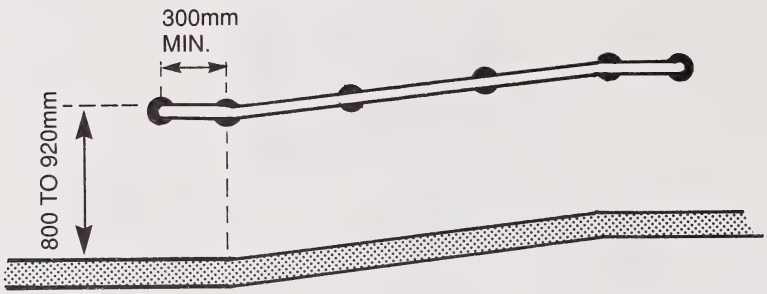
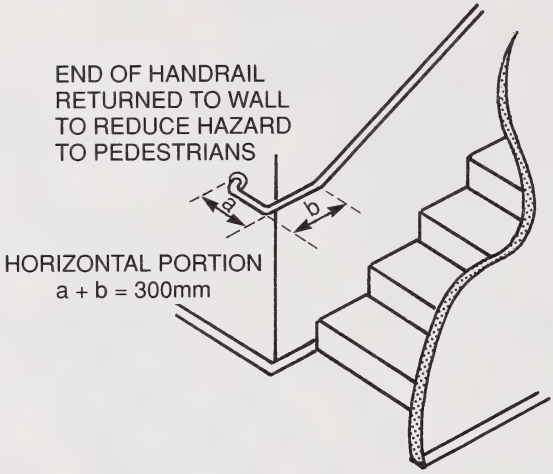
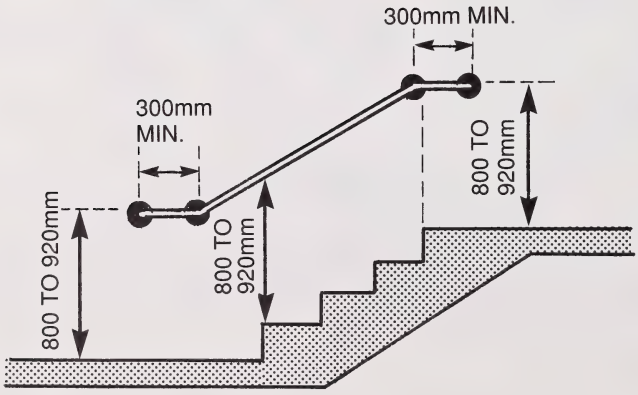
HANDRAILS







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ELEVATORS

Elevators

3.7.3.5.(1) The passenger-type elevator in Article 3.7.2.1. shall conform to Appendix E of Supplement No. 3 of CSA B44, "Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks."

Other elevating devices

* **3.7.3.5.(2)** The passenger-type elevating device in Article 3.7.2.1. shall conform to CAN3-B355, "Safety Code for Elevating Devices for the Handicapped," as adopted under the Elevator and Fixed Conveyances Act.

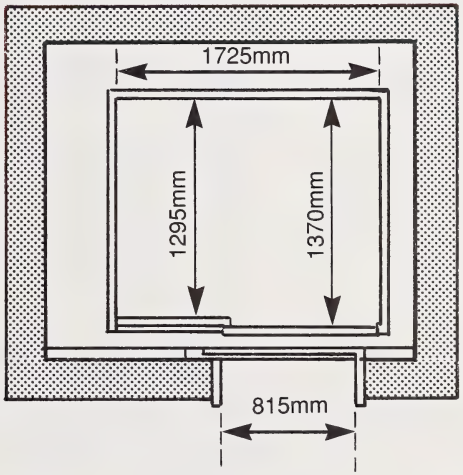
* **3.7.3.5.(3)** The passenger-type elevator referred to in 3.7.3.5.(1) shall have

(a) hall or in-car audible signals that indicate at not less than 24 dBA the direction the elevator is moving when it stops at a landing by sounding once for the up direction or twice for the down direction or a similar verbal annunciator acceptable to the **authority having jurisdiction**,

(b) an alarm bell button that visually indicates the operation of the alarm bell, and

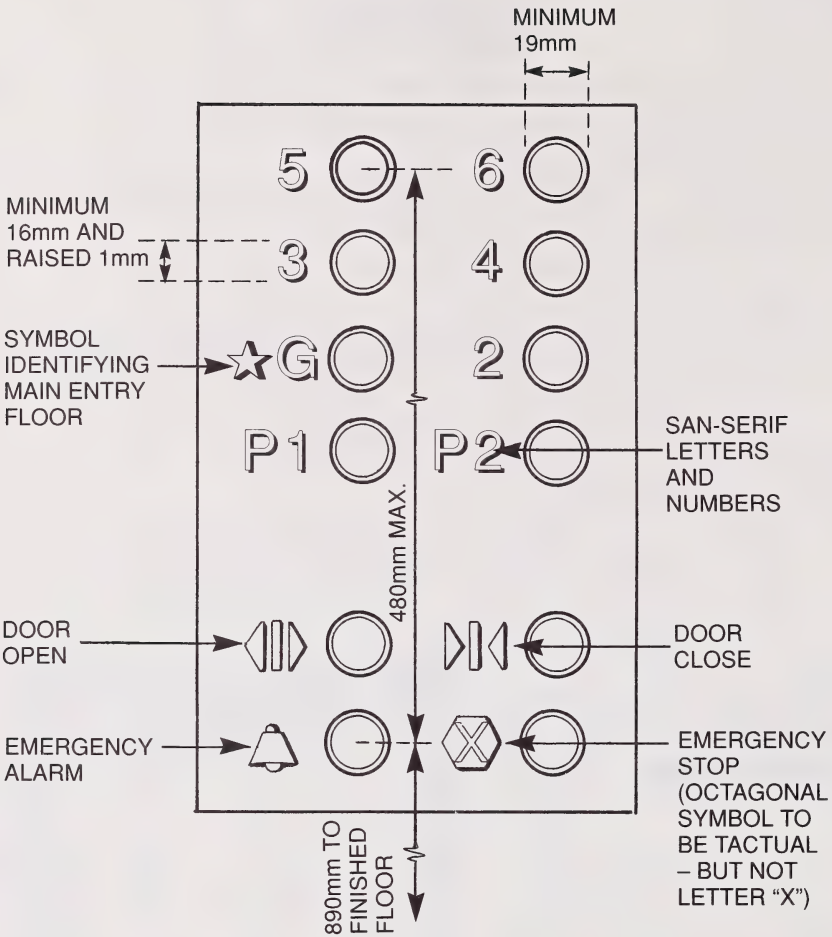
(c) the symbols in Clause E8.5 of Appendix E of C.S.A. B44, "Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks," raised the same as the numbers in Clause E8.4.

MINIMUM DIMENSIONS OF ELEVATOR CARS



Elevators for disabled persons must be designed so that a person in a wheelchair can operate them conveniently and safely.

Elevator dimensions, controls, floor covering, handrails, position indicators, telephone, minimum illumination level, etc., shall be in conformance with the requirements of Supplement No. 3 of CSA B44, "Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks."



ELEVATOR CAR OPERATING PANEL

Control buttons inside and outside the elevator cab should be mounted at heights which are within the reach of a person in wheelchair.

Hall or in-car audible signals are to be provided to indicate direction of car travel when the elevator stops at a landing by sounding once for the up direction and twice for the down direction. The signal shall be at 24 dBA or more. A verbal annunciator is an acceptable alternate.

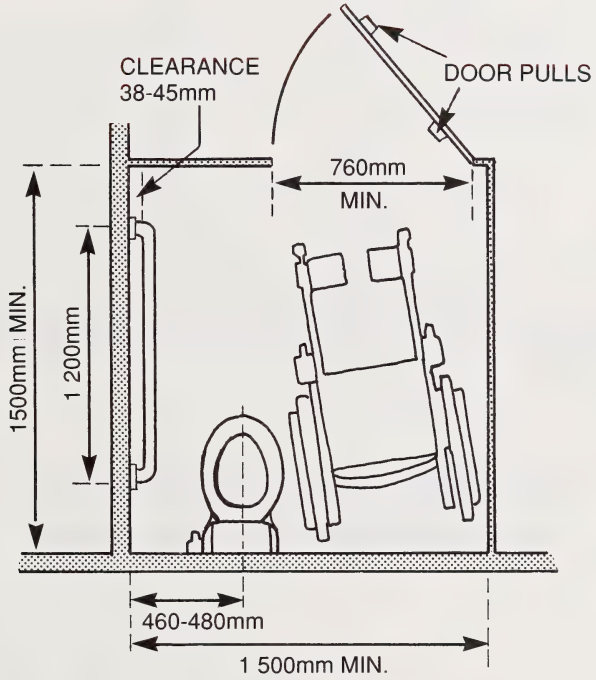
The operation of the alarm bell shall be visually indicated in the elevator when the alarm bell sounds.

WATER CLOSET STALL

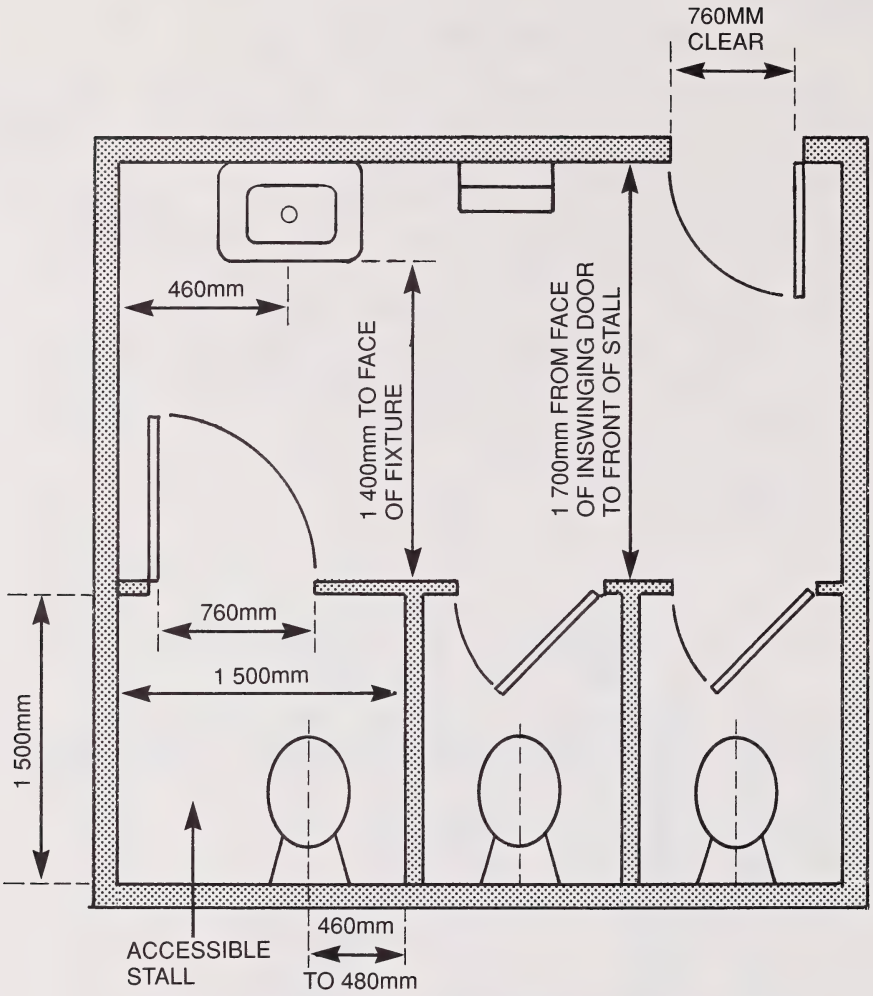
Water closet stalls for disabled persons

3.7.3.6.(1) Where a washroom is required by Article 3.7.2.3. to accommodate disabled persons, at least 1 water closet stall or enclosure shall

(a) be at least 1.5 m in width by 1.5 m in depth,
(b) be equipped with a door which shall
  (i) be capable of being locked from the inside,
  (ii) provide a clear opening of at least 760 mm with the door in the open position,
  (iii) swing outward, unless sufficient room is provided within the stall or enclosure to permit the door to be closed without interfering with the wheelchair,
  (iv) be provided with a door pull on the inside located so that the centreline is between 200 mm and 300 mm from the hinged side of the door, and
  (v) be provided with a door pull on the outside, near the latch side of the door,
(c) have a water closet located so that its centreline is not less than 460 mm and not more than 480 mm from an adjacent side wall on 1 side,



Water closet accessories (toilet tissue dispensers, grab bars, coat hooks) should be located so as not to create a hazard for visually impaired persons.



MINIMUM DIMENSIONS FOR ACCESSIBLE WASHROOMS

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* (d) be equipped with a grab bar that shall be

(i) not less than 30 mm nor more than 40 mm in diameter,

(ii) installed with a clearance from the wall off not less than 38 mm nor more than 45 mm, and

(iii) designed and installed to resist a load of not less than 1.3 kN applied vertically or horizontally,

and mounted

(iv) horizontally on the wall behind the water closet so that it extends the full width of the water closet bowl if the water closet does not have a tank,

(v) horizontally on the wall beside the water closet, and be not less than 1 200 mm in length, located with its centreline between 815 mm and 865 mm above the floor and with its midpoint located in line with the front edge of the water closet, or

(vi) on the wall beside the water closet and have a horizontal portion 600 mm in length with a 600 mm extension extending upwards to the front and away from the horizontal portion at an angle of 60° to the horizontal with the centreline of the horizontal portion between 815 mm and 865 mm above the floor and the intersection of the horizontal and sloping portions located in line with the front edge of the water closet.

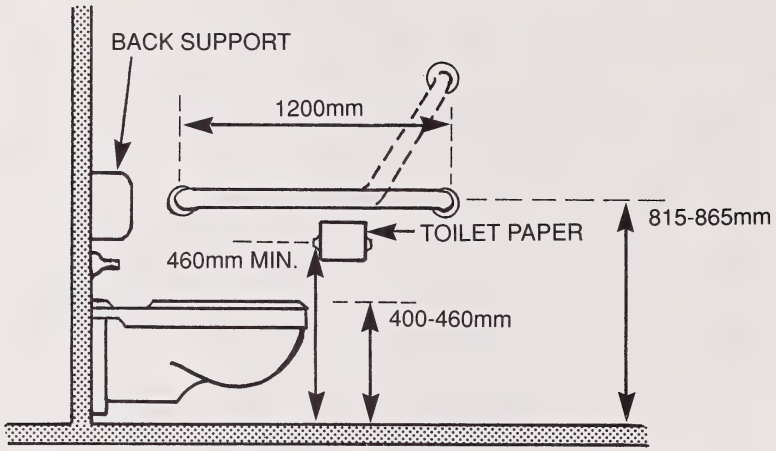
(e) be equipped with a coat hook mounted not more than 1.4 m above the floor on a side wall and projecting not more than 25 mm from the wall,

(f) have a clearance of at least 1.7 between the outside of the stall face and the face of an in-swinging washroom door and 1.4 m between the outside of the stall face and any wall-mounted fixture, and

* (g) have ancillary items such as a toilet paper dispenser located on the wall nearest to the water closet below the grab bar, not less than460 mm above the floor, and within easy reach of a person seated on the water closet. (See Appendix A.)

Appendix Note

A-3.7.3.6.(1) Water Closet Stalls. Doors to water closet stalls for disabled persons should swing outward and preferably against a side wall.



WATER CLOSET

The height of water closets shall be 400 mm to 460 mm, measured to the top of the toilet seat, flush controls shall be hand operated or automatic; toilet paper dispenser shall be installed within reach.

URINALS

* **3.7.3.6.(2)** If urinals are provided in a washroom required by Sentence 3.7.2.3.(1) to accommodate disabled persons, at least one urinal shall be either

(a) wall-mounted with the opening of the basin between 488 mm and 512 mm above the finished floor, or

(b) floor mounted at the same level as the finished floor,

with no step being permitted in front of either type of urinal and a vertically mounted grab bar shall be installed on the wall beside the urinal.

Water closets for disabled persons

3.7.3.7.(1) Water closets for disabled persons shall

(a) be equipped with seats located at not less than 400 mm and not more than 460 mm above the floor level,

(b) be equipped with hand-operated flushing controls that are easily accessible to a wheelchair user,

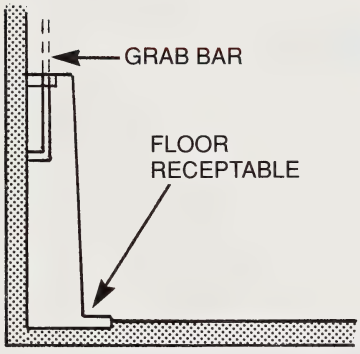
(c) be equipped with a back support such as a seat lid, and

(d) not have a spring-activated seat.

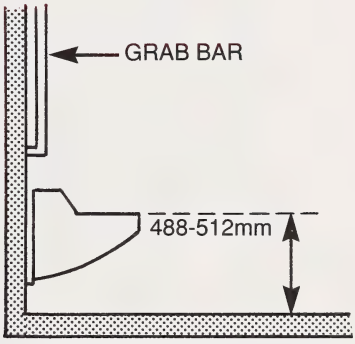
(See Appendix A.)

Appendix Note

A-3.7.3.7.(1) Water Closets. Wall-mounted water closets or floor models with receding bases are preferable because they provide the least amount of obstruction.

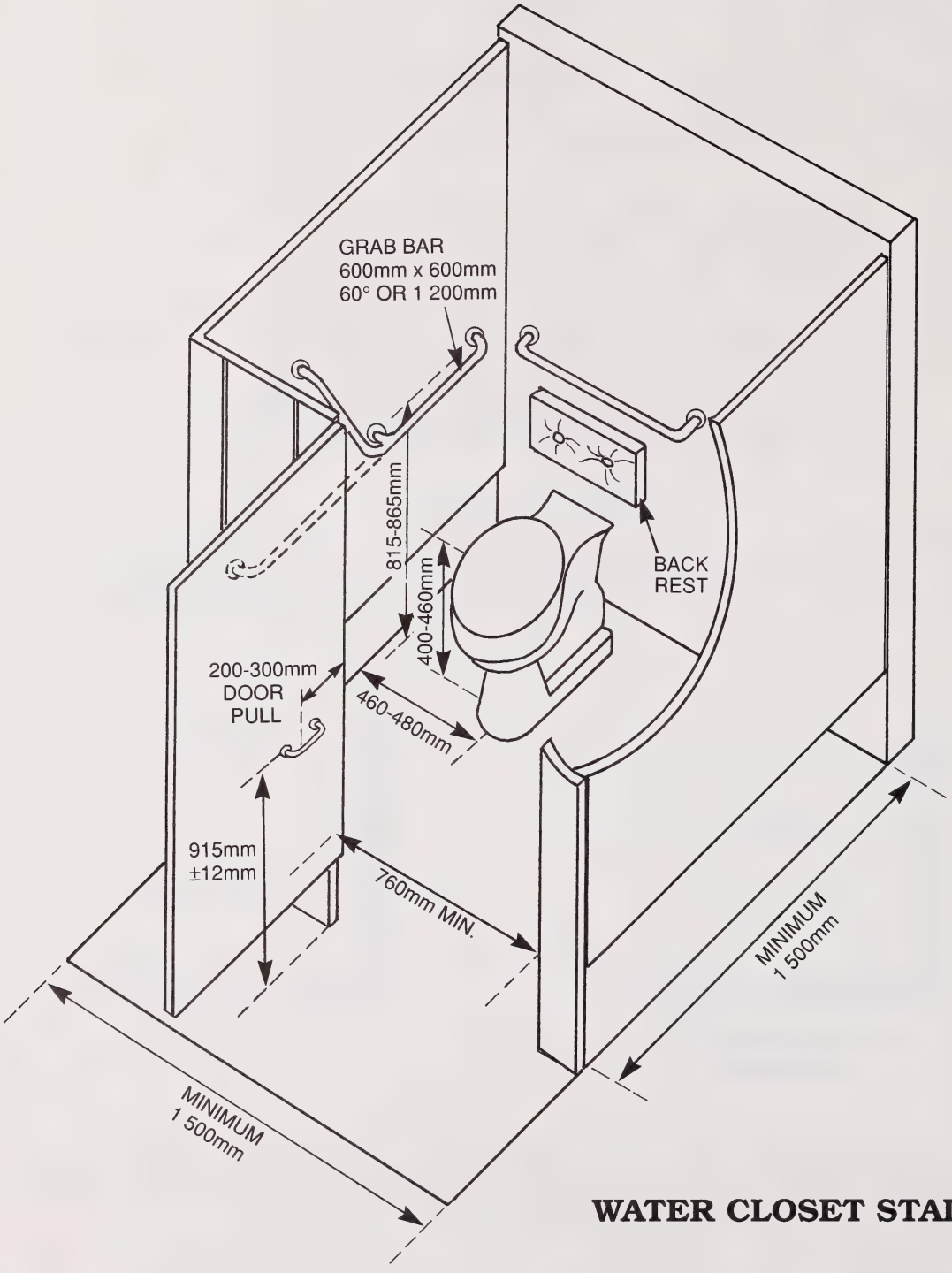


FLOOR-MOUNTED (preferred)



WALL-MOUNTED

A clear floor space shall be provided in front of urinals to allow forward approach. Privacy shield shall not extend beyond the front edge of the urinal rim. Flush controls shall be hand operated or automatic.



WATER CLOSET STALL

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LAVATORY

Lavatories for disabled persons

3.7.3.8.(1) Where a washroom is required to accommodate disabled persons, it shall

(a) be equipped with a lavatory which shall

(i) be mounted so that the distance between the centre-line of the fixture and the side wall is at least 460 mm,

(ii) have a clearance of at least 660 mm beneath the bottom of the lavatory to a point at least 260 mm in from the front,

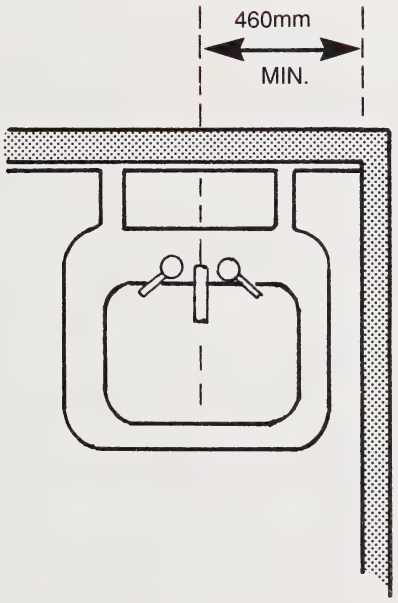
(iii) have insulated waste outlet pipes where the waste pipes constitute a burn hazard,

(iv) have faucet handles of the lever type that are not spring-loaded,

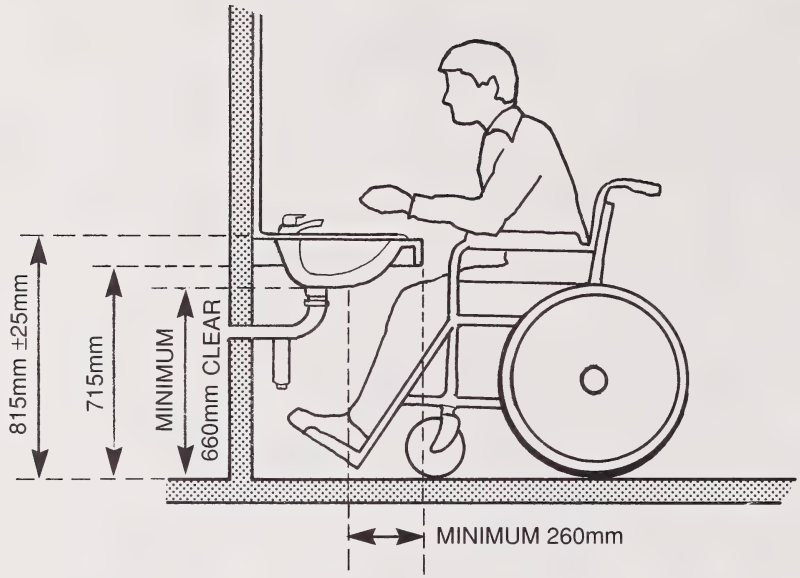
and

(v) have no shelves or other projections located above it so as to create a hazard.

* **3.7.3.8.(2)** If mirrors are provided in a washroom required to accommodate physically disabled persons, at least one mirror shall be mounted with its bottom edge not more than 1 000 mm above the finished floor, or shall be tilted to be usable by a person in a wheelchair.

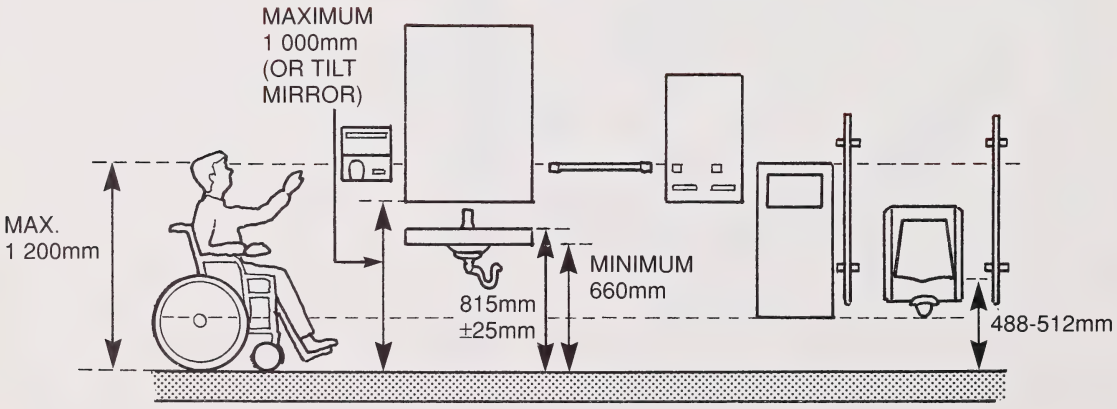


Hot water and drain pipes under lavatories shall be insulated or otherwise protected where they contribute a burn hazard to persons in wheelchairs.



LAVATORY

* **3.7.3.8.(3)** In a washroom required to accommodate physically disabled persons, washroom accessories shall be available that are of a type, and are installed, so as to be usable by a person in a wheelchair and shall be not more than 1 200 mm from the finished floor to the operating part.



WASHROOM ACCESSORIES

UNISEX WASHROOM

Special washrooms

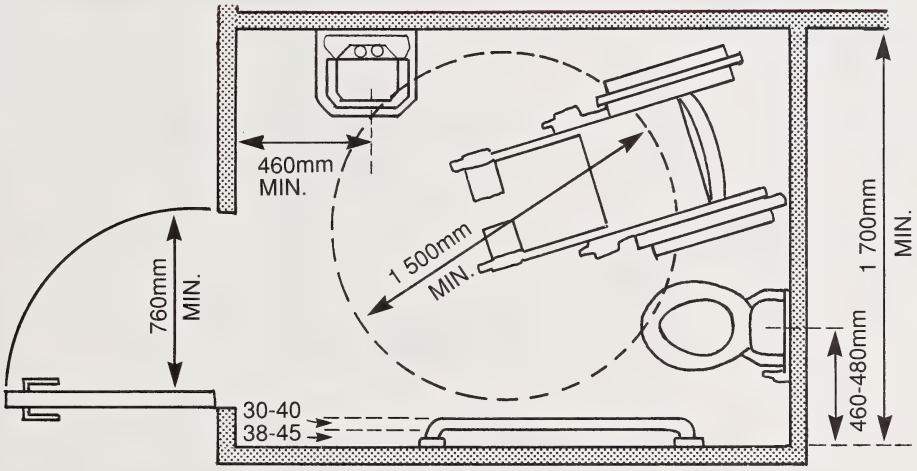
3.7.3.9.(1) Where a special washroom is provided primarily for the use of disabled persons of both sexes in lieu of facilities for disabled persons in washrooms used by the general public, such washrooms shall

(a) be equipped with doors capable of being locked from the inside and released from the outside,
(b) be provided with a lavatory conforming to Article 3.7.3.8.,
(c) be equipped with a water closet conforming to Article 3.7.3.7.,
(d) be equipped with grab bars conforming to Clause 3.7.3.6.(1)(d),
(e) have no dimension less than 1.7 m,
(f) have fixture clearances conforming to the fixture clearances described in Articles 3.7.3.6. to 3.7.3.8., and
(g) have a doorway conforming to Article 3.7.3.3.

(See Appendix A.)

Appendix Note

A-3.7.3.9.(1) Special Washrooms. Unobstructed areas in front of the lavatory, in front of the water closet and on one side of the water closet are necessary for the maneuverability of a wheelchair.



SPECIAL WASHROOMS

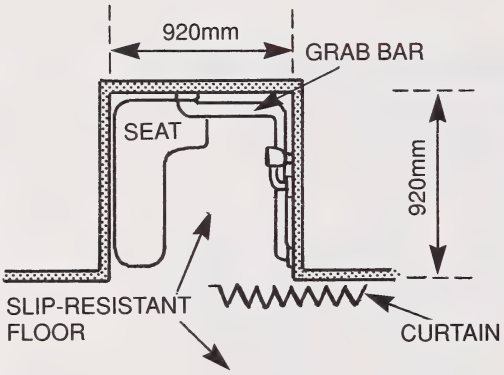
Where a special washroom common to both sexes is provided, it should be at least 1.7 m in width and 1.7 mm in depth and the rest of the fixtures, such as grab bars, water closet, lavatory, etc., should be in conformance with Article 3.7.3.6. to 3.7.3.8.

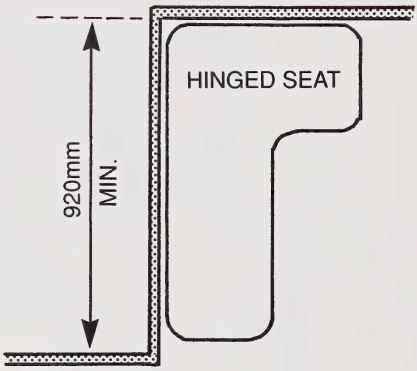
SHOWER STALL

3.7.3.10.(1) Where individual shower stalls are provided in **buildings** of **assembly occupancy,** at least 1 shower stall shall be provided for disabled persons which shall

Shower stalls for disabled persons

(a) have no dimension less than 920 mm,
(b) be equipped with a hinged seat that is not spring loaded,
(c) be equipped with grab bars mounted approximately 900 mm above the floor on the wall opposite the seat, extending around at least 300 mm along the adjacent wall,
(d) be equipped with pressure-balanced single lever controls,
(e) be equipped with a hand-held shower head with at least 1.5 m of flexible hose capable of being used as a fixed shower head mounted approximately 450 mm in from the front of the shower and approximately 1.2 m above the floor,
(f) have a bevelled threshold not exceeding 13 mm in height above the finished floor, and
(g) have a slip-resistant floor.



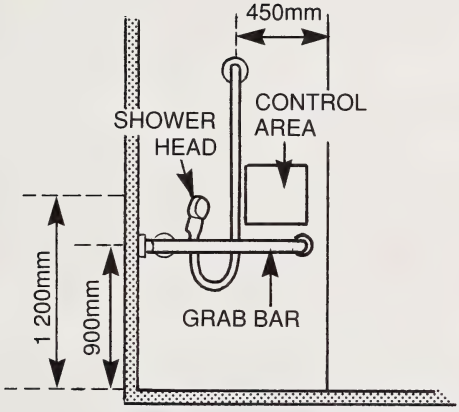


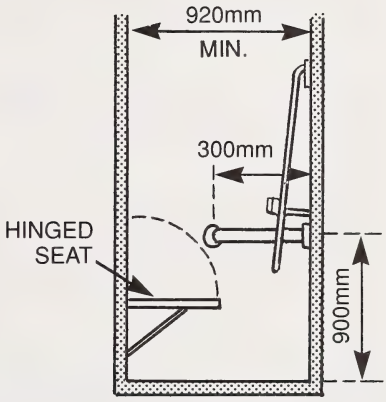
In assembly buildings such as schools, colleges and community halls, where individual showers are provided at least one shower stall for the disabled should be provided.

In the above-mentioned buildings at least one change room should be provided for each sex to accommodate the disabled persons.

The inside measurements of the shower stall shall be at least 920 mm by 920 mm with a non-slip floor finish and a bevelled threshold of not more than 13 mm.

The shower stall shall be equipped with a hinged seat, grab bar, pressure-balanced single lever controls and a hand-held shower head with flexible hose.





SHOWER STALL

ADDITIONAL REQUIREMENTS

THERE ARE SOME ADDITIONAL REQUIREMENTS IN THE ALBERTA BUILDING CODE 1985 TO ACCOMMODATE VISUALLY IMPAIRED PERSONS AND PERSONS WITH HEARING IMPAIRMENT.

THESE REQUIREMENTS ARE NOT RESTRICTED TO BARRIER-FREE ACCESS ROUTES, BUT WILL APPLY TO ALL AREAS AND TO ALL BUILDINGS.

3.3.1.7.(3) Except as permitted in Sentence (4), obstructions located within 1 980 mm of the floor shall not project more than 100 mm horizontally into **exit** passageways, **public corridors,** corridors used by the public or corridors serving classrooms or patients' bedrooms in a manner that would create a hazard for visually impaired persons travelling adjacent to walls.

3.3.1.7.(4) The horizontal projection of an obstruction in Sentence (3) is permitted to exceed 100 mm where it extends to less than 680 mm above the floor. (See Appendix A.)

Appendix Note

A-3.3.1.7.(4) The sweep of a cane used by blind or visually impaired persons normally detects obstructions that are within 680 mm of the floor. Any obstruction above this height would not normally be detected and can, therefore, create a hazard if it projects more than 100 mm into the path of travel.

3.2.4.13.(4) In a **building** or portion thereof intended for use primarily by persons with hearing impairments, visual signal appliances shall be installed in addition to audible signal appliances.

Obstruction in corridors

9.9.5.3. Except as permitted in Article 9.9.5.4., obstructions located within 1 980 mm of the floor shall not project horizontally more than 100 mm into **exit** passageways, corridors used by the public or **public corridors** in a manner that would create a hazard for visually impaired persons travelling adjacent to walls.

9.9.5.4. The horizontal projection of an obstruction in Article 9.9.5.3. is permitted to exceed 100 mm where the obstruction extends to less than 680 mm above the floor. (See A-3.3.1.7.(4) in Appendix A.)

ELIMINATION OF OBSTRUCTIONS THAT ARE NOT DETECTABLE BY THE USE OF CANES IN EXITS AND CORRIDORS.

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3.4.7.5.(5) At least 1 handrail shall be continuous throughout the length of the stairway, including landings, except where interrupted by doorways or newels at changes in direction. (See Appendix A.)

Appendix Note

A-3.4.7.5.(5) Blind or visually-impaired persons rely on handrails to guide them on stairways. A continuous handrail will assist them in negotiating stairs at changes in direction. The extended handrail is useful to persons with physical limitations to steady themselves before using the stairs. Handrails should, however, return to the wall, floor or post, so as not to constitute a hazard to blind or visually-impaired persons.

3.4.7.5.(6) Handrails shall be terminated in a manner which will not obstruct pedestrian travel or create a hazard. (See A-3.4.7.5.(5) in Appendix A.)

9.8.7.2. Except for stairs serving only 1 **dwelling unit,** at least 1 handrail shall be continuous throughout the length of the stairway, including landings, except where interrupted by doorways or newels at changes in direction. (See A-3.4.7.5.(5) in Appendix A.)

9.8.7.3. Except for stairs serving only 1 **dwelling unit,** handrails shall be terminated in a manner that will not obstruct pedestrian travel or create a hazard (See A-3.4.7.5.(5) in Appendix A.)

CONTINUITY OF AT LEAST ONE HANDRAIL AROUND STAIR LANDING – AND THE SAFE TERMINATION OF THE ENDS OF HANDRAILS TO PREVENT THEM FROM BEING A HAZARD.

3.4.7.5.(7) Handrails at the sides of stairs and ramps shall extend horizontally at least 300 mm beyond the top and bottom of the stairways and ramps. (See A-3.4.7.5.(5) in Appendix A.)

Appendix Note

A-3.4.7.5.(5) Blind or visually impaired persons rely on handrails to guide them on stairways. A continuous handrail will assist them in negotiating stairs at changes in direction. The extended handrail is useful to persons with physical limitations to steady themselves before using the stairs. Handrails should, however, return to the wall, floor or post, so as not to constitute a hazard to blind or visually-impaired persons.

9.8.7.4. Except for stairs serving only 1 **dwelling unit,** handrails at the sides of stairs and ramps shall extend horizontally at least 300 mm beyond the top and bottom of stairways and ramps. (See A-3.4.7.5.(5) in Appendix A.)

IN ORDER TO ASSIST AMBULATORY PEOPLE WITH WALKING DIFFICULTIES, HANDRAILS FOR STAIRS AND RAMPS ARE REQUIRED TO EXTEND HORIZONTALLY AT LEAST 300 mm BEYOND THE TOP AND BOTTOMS OF THE STAIRS.

THIS EXTENSION IS PERMITTED TO BE AT AN ANGLE TO THE DIRECTION OF THE STAIR TO AVOID PROJECTING THE HANDRAIL INTO A PATH OF TRAVEL.

3.4.7.12.(18) Arabic numerals indicating the assigned floor number shall

(a) be mounted permanently on the stair side of the wall at the latch side of doors to **exit** stair shafts,
(b) be at least 60 mm high, raised approximately 0.7 mm above the surface,
(c) be located 1 500 mm from the finished floor and not more than 300 mm from the door, and
(d) be contrasting in colour with the surface on which they are applied. (See Appendix A.)

Appendix Note

A-3.4.7.12.(18)(d) Colour Contrast. The identification of floor and other signs intended to facilitate orientation for visually-impaired persons should offer maximum colour contrast to be effective. For this reason, it is recommended that white on black or black on white be used, as this combination produces the best legibility. It is also recommended that the sign surfaces be processed so as to prevent glare.

3.5.5.1.(4) Arabic numerals indicating the assigned floor number shall be mounted permanently on both jams of passenger elevator hoistway entrances in conformance with Appendix E of CSA B44, "Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks."

TACTILE NUMBERS ON ELEVATOR DOOR JAMBS AND EXIT DOORS

REQUIREMENTS OF HANDRAILS AND GUARDS ON RAMPS IN A BARRIER-FREE ACCESS ARE THE SAME AS TO ANY OTHER BUILDING.

Handrails

3.4.7.5.(1) Every **exit** ramp or stairway shall have a handrail on at least 1 side, and where 1 100 mm or more in width, shall have handrails on both sides.

3.4.7.5.(2) Where the required width of a ramp or flight of stairs exceeds 2 200 mm, 1 or more intermediate handrails continuous between landings shall be provided, and the number and position of these intermediate handrails shall be such that there will be not more than 1 650 mm between handrails.

3.4.7.5.(3) Handrails shall be constructed so that there will be no obstruction on or above them which will break a hand hold. (See Appendix A.)

Appendix Note

A-3.4.7.5.(3) Handrails. Handrails should be easy to grasp. A circular section with a diameter of not more than 40 mm is the preferred shape. Wide or deep handrails are undesirable unless a proper hand-size grasping area is provided.

3.4.7.5.(4) Handrails on stairs and ramps shall be not less than 800 mm and not more than 920 mm in height, measured vertically from a line drawn through the outside edges of the stair nosing or from the surface of the ramp, except that handrails not meeting these requirements are permitted provided they are installed in addition to the required handrail.

3.4.7.5.(5) At least 1 handrail shall be continuous throughout the length of the stairway, including landings, except where interrupted by doorways or newels at changes in direction. (See Appendix A.)

Appendix Note

A-3.4.7.5.(5) Blind or visually-impaired persons rely on handrails to guide them on stairways. A continuous handrail will assist them in negotiating stairs at changes in direction. The extended handrail is useful to persons with physical limitations to steady themselves before using the stairs. Handrails should, however, return to the wall, floor or post, so as not to constitute a hazard to blind or visually-impaired persons.

3.4.7.5.(6) Handrails shall be terminated in a manner which will not obstruct pedestrian travel or create a hazard. (See A-3.4.7.5.(5) in Appendix A.)

Appendix Note

A-3.4.7.5.(5) Blind or visually-impaired persons rely on handrails to guide them on stairways. A continuous handrail will assist them in negotiating stairs at changes in direction. The extended handrail is useful to persons with physical limitations to steady themselves before using the stairs. Handrails should, however, return to the wall, floor or post, so as not to constitute a hazard to blind or visually-impaired persons.

3.4.7.5.(7) Handrails at the sides of stairs and ramps shall extend horizontally at least 300 mm beyond the top and bottom of the stairways and ramps. (See A-3.4.7.5.(5) in Appendix A.)

3.4.7.5.(8) A clearance of at least 40 mm shall be provided between every handrail and any wall to which it is fastened.

3.4.7.5.(9) Windows in **exit** stairways that extend to less than 1 070 mm above the landing shall be protected by a barrier or railing located approximately 1 070 mm above such landing.

Guards

3.4.7.6.(1) Every **exit** such as a ramp, stairway or passageway shall have a wall or a well-secured **guard** on each side.

3.4.7.6.(2) Except as provided in Sentence (3), the height of **guards** on **exit** stairs shall be not less than 920 mm measured vertically to the top of the **guard** from a line drawn through the outside edges of the stair nosings and 1 070 mm around landings.

3.4.7.6.(3) The height of **guards** of exterior stairs and landings more than 10 m above adjacent ground level shall not be less than 1 500 mm measured vertically to the top of the **guard** from a line drawn through the outside edges of the stair nosings.

* **3.4.7.6.(4)** The size of any opening through **guards** for **exits** shall be such as to prevent the passage of a spherical object having a diameter of 100 mm in **buildings** or **residential occupancy,** and in day care centres, nurseries, or other similar type **occupancies** where children may be present, and 200 mm in **buildings** of other **occupancy,** except where the location and size of the openings that exceed this limit do not present a hazardous condition.

SUPPLEMENTARY INFORMATION

Information in this section are recommendations only, they are not required by the Alberta Building Code 1985.

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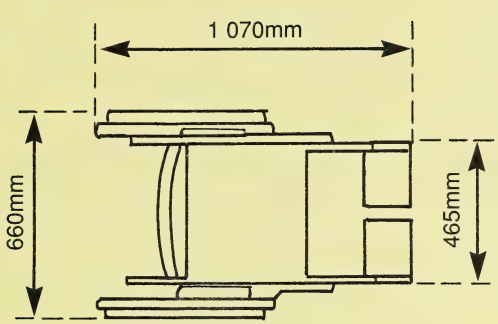

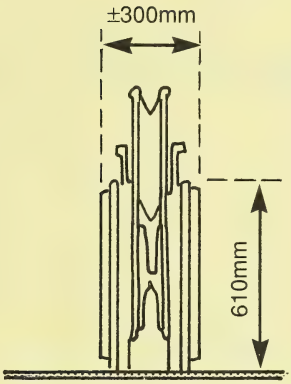

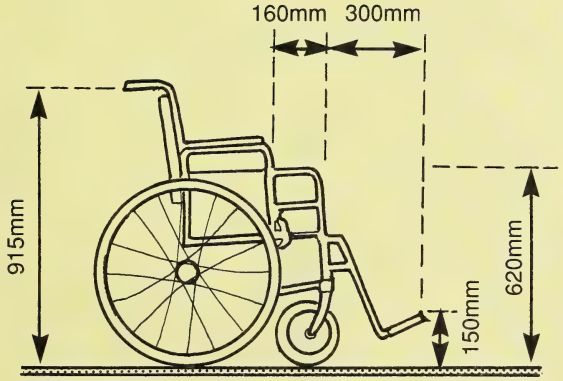

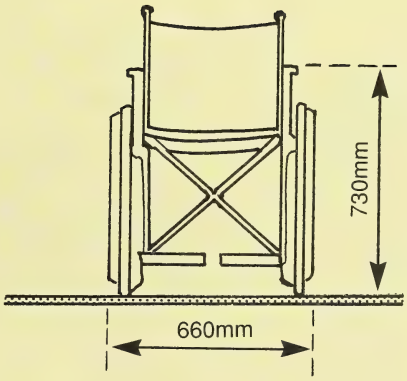

TYPICAL WHEELCHAIR

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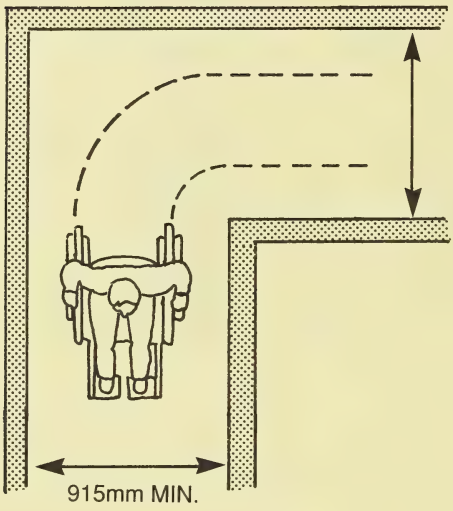
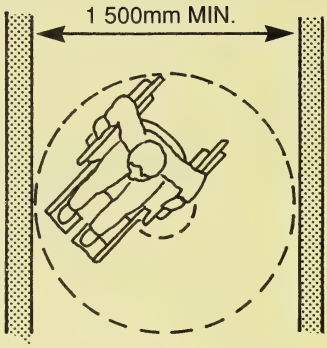
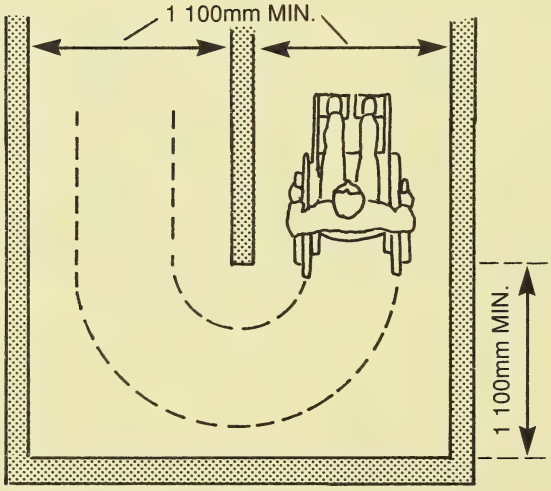
CLEARANCE FOR WHEELCHAIR





Minimum space required to maneuver a wheelchair.



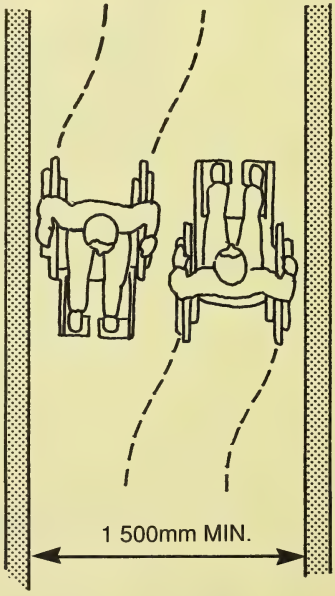


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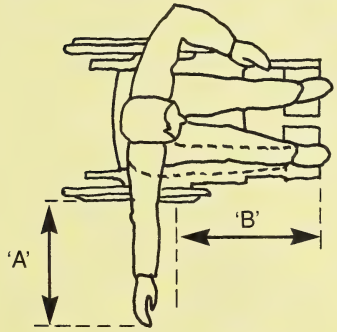
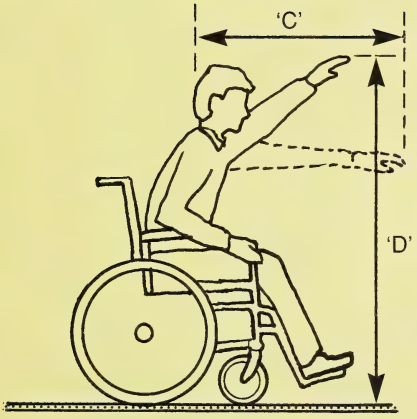
Table

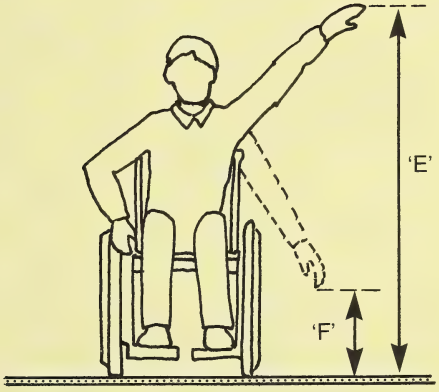
Key	Male(1)	Female (2)	Child(3)
A Easy side reach	505mm	439mm	300mm
B Easy forward reach	541mm	513mm	389mm
C Maximum forward reach	922mm	869mm	668mm
D High reach (forward)	1410mm	1308mm	965mm
E High reach (side)	1641mm	1506mm	1237mm
F Full reach (down)	338mm	439mm	508mm
Column 1	2	3	4

(1) Male height – 1740mm (2) Female height – 1605mm

(3) Child height (6-9 years) – 1245mm







REACH OF PERSONS IN WHEELCHAIR

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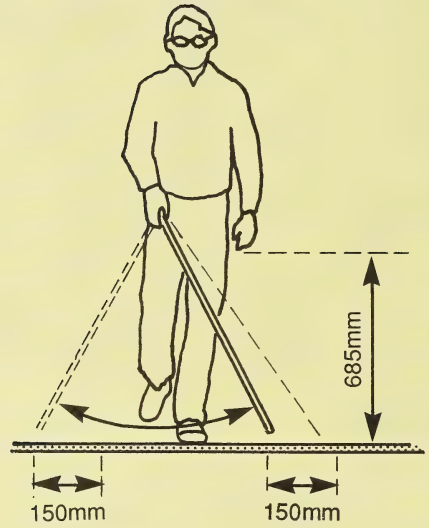
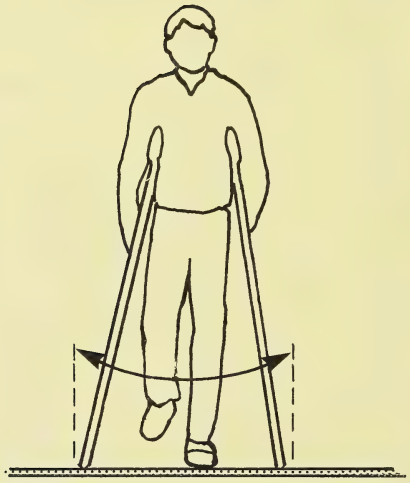


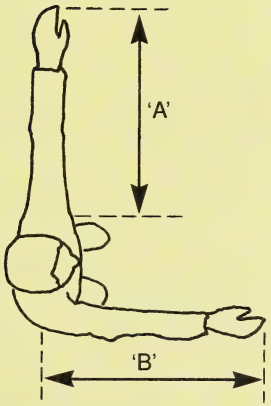


Clearances for cane walkers and persons with crutches.

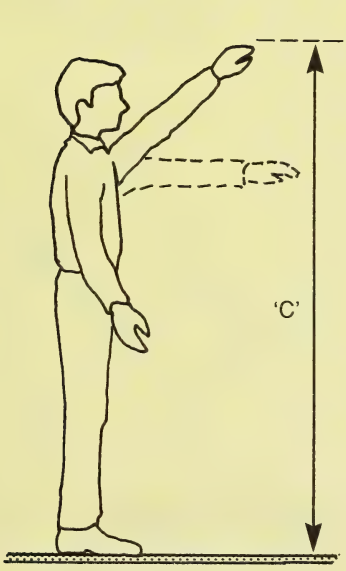
Table

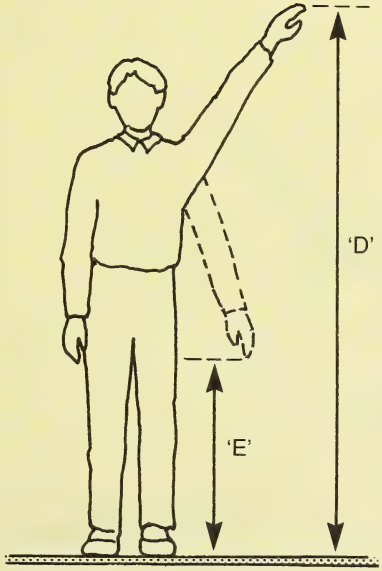
Key	Male(1)	Female (2)	Child(3)
A Side reach	727mm	673mm	524mm
B Forward reach	638mm	592mm	462mm
C High reach (forward)	1928mm	1786mm	1372mm
E High reach (side)	2002mm	1849mm	1423mm
F Low reach (side)	762mm	665mm	499mm
Column 1	2	3	4

(1) Male height – 1740mm
(2) Female height – 1605mm
(3) Child height (6-9 years) – 1245mm



REACH OF AMBULANT PERSONS





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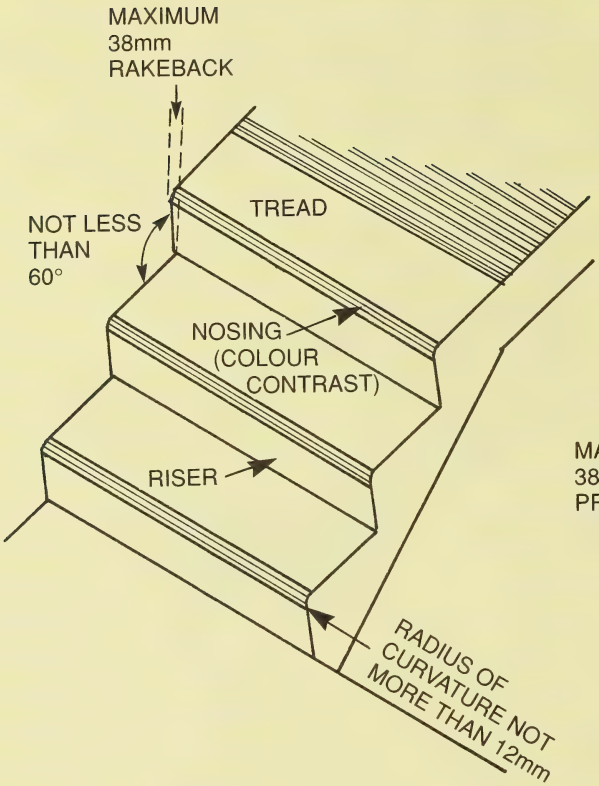
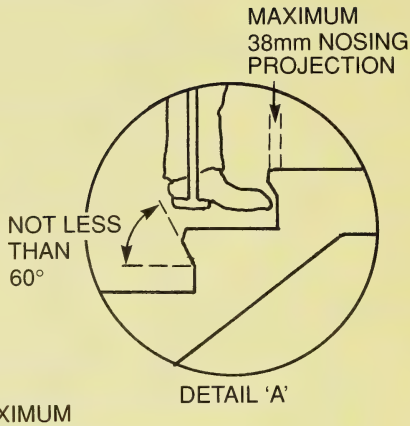
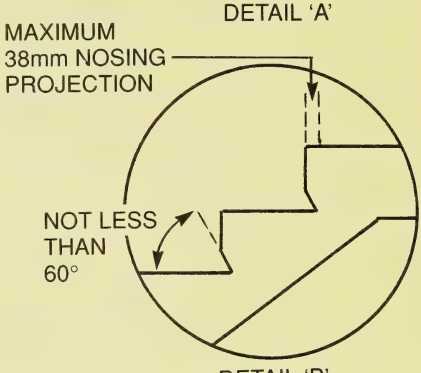




DETAIL 'A'



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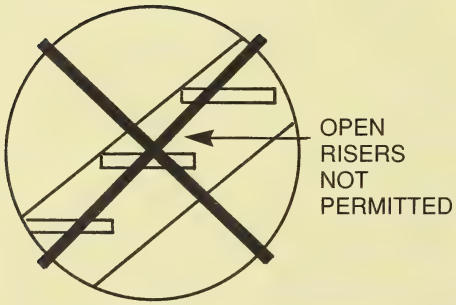
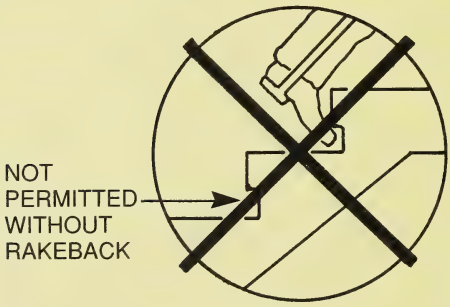


DETAIL 'C'



DETAIL 'D'

STAIR TREAD AND RISERS

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To assist persons with visual impairment, colour contrast tactile warning strips shall be provided at the top of an escalator or a stairway and at intermediate landings intercepted by other paths of travel.

The tactile strip shall be from a point one tread depth back from the front edge of the stair to a point 750 mm back and for the full width of the stair tread.

The tactile strip shall be slip-resistant and detectable by walking upon as being different from, and in contrasting colour to the surrounding flooring.

Nosing is to be of contrasting colour with respect to the treads and risers.

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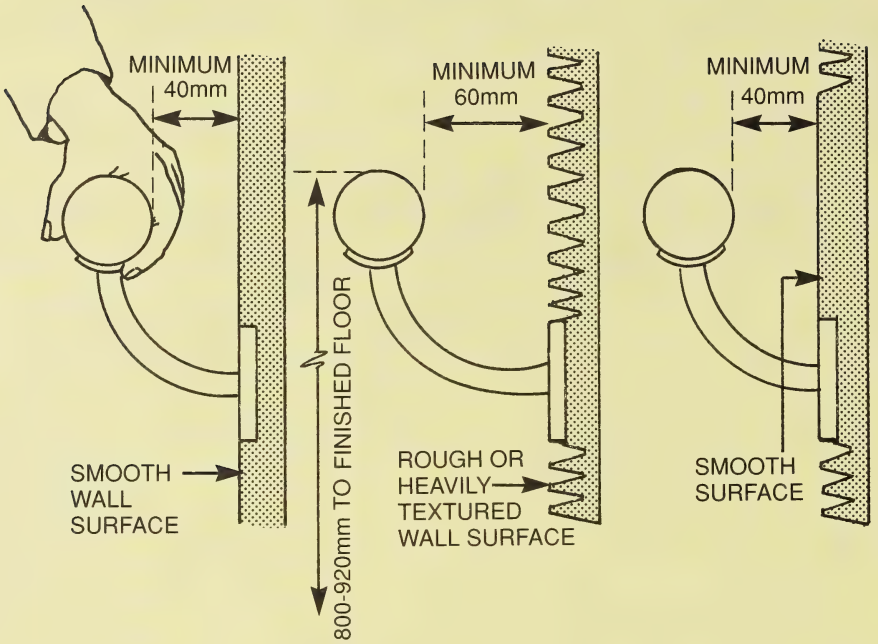

HANDRAIL CLEARANCES

To assist persons with visual impairment, handrails when attached to wall shall be in contrasting colour to the wall and have tactile identification extending for a length of 750 mm from the exit level.

Top of handrail should be between 800 mm and 920 mm measured vertically from a line drawn through the front edge of the stair nosings or measured vertically above the surface of a landing floor.

Wall texture to be considered when designing or mounting handrails.

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STAIR PLATFORM LIFTS

For retrofit or new construction stair platform lifts can be installed on straight or curved stairways to carry a wheelchair passenger from floor to floor.

Note: Please check with the local authority having jurisdiction before stair platform lifts are installed on stairs serving as required exits.

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ELEVATOR CAR DIMENSIONS AND CONTROLS

The following requirements are intended to make passenger elevators useable by disabled persons.

DOOR

Minimum clear width for elevator doors should be 810 mm. Doors should be provided with a door re-opening device that will function to stop and re-open a car door and adjacent hoistway door to at least 810 mm in case the car door is obstructed while closing. This re-opening device should also be capable of sensing an object or person in the path of a closing door without requiring contact for activation at a nominal 125 mm and 735 mm ± 25 mm above the floor. The door re-opening devices should remain effective for a period of not less than 20 seconds.

From the time the door starts to open, a minimum period of 3 seconds should elapse before the doors start to close (from the fully open position). This time may be reduced after interruption of the door protective device or operation of the door close or car call buttons.

CAR SIZE

The minimum clear distance between walls or between a wall and door, excluding return panels, should not be less than 1 370 mm x 1 370 mm. Minimum distance from a wall to return panel should not be less than 1 295 mm. On cars designed to allow for the turning of a wheelchair, the minimum clear distance between wall and door, excluding return panels, should not be less than 1 725 mm x 1 370 mm.

CAR CONTROLS

Car controls should be readily accessible from a wheelchair upon entering an elevator. Emergency controls and door operating buttons should be grouped together at the top of the control panel. The centre line of the alarm button and emergency stop switch should not be higher than 1 370 mm from the floor. The centre line of the lowest floor button should be a nominal 890 mm from the floor. Other controls may be located as convenient.

Floor registration buttons should be a minimum 19 mm in size and they may be raised, flushed or recessed. Depth of flush or recessed buttons when operated should not exceed 9.5 mm.

Arabic numerals should be adjacent on the left of floor buttons on a contrasting colour background. Marking should be a minimum of 16 mm high and raised a minimum of 1 mm. Permanently attached plates are acceptable.

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Visual indication should be provided to show each call registered and extinguished when the call is answered.

An indicator should be provided in the car to show the position of the car in the hoistway by illumination of the indication corresponding to the landing at which the car is stopped or passing. Indication characters should be on a contrasting colour background and a minimum of 25 mm in height.

TELEPHONE

The telephone should be located a maximum of 1 220 mm from the floor with a minimum cord length of 915 mm.

The international symbol for telephones should be located on the telephone cabinet in a contrasting colour. The symbol should be a minimum of 40 mm high and raised a minimum of 1 mm. Permanently attached plates are acceptable.

FLOORING

Floor covering should have a non-slip surface that permits easy movement of wheelchairs.

HANDRAILS

Handrails should be provided on all non-access walls. The rails should be at least 40 mm clear of the walls at a height of 810 mm ± 25 mm from the finished floor.

ILLUMINATION

The minimum illumination at the car controls and landing sill should not be less than 54 lx.

HALL BUTTONS

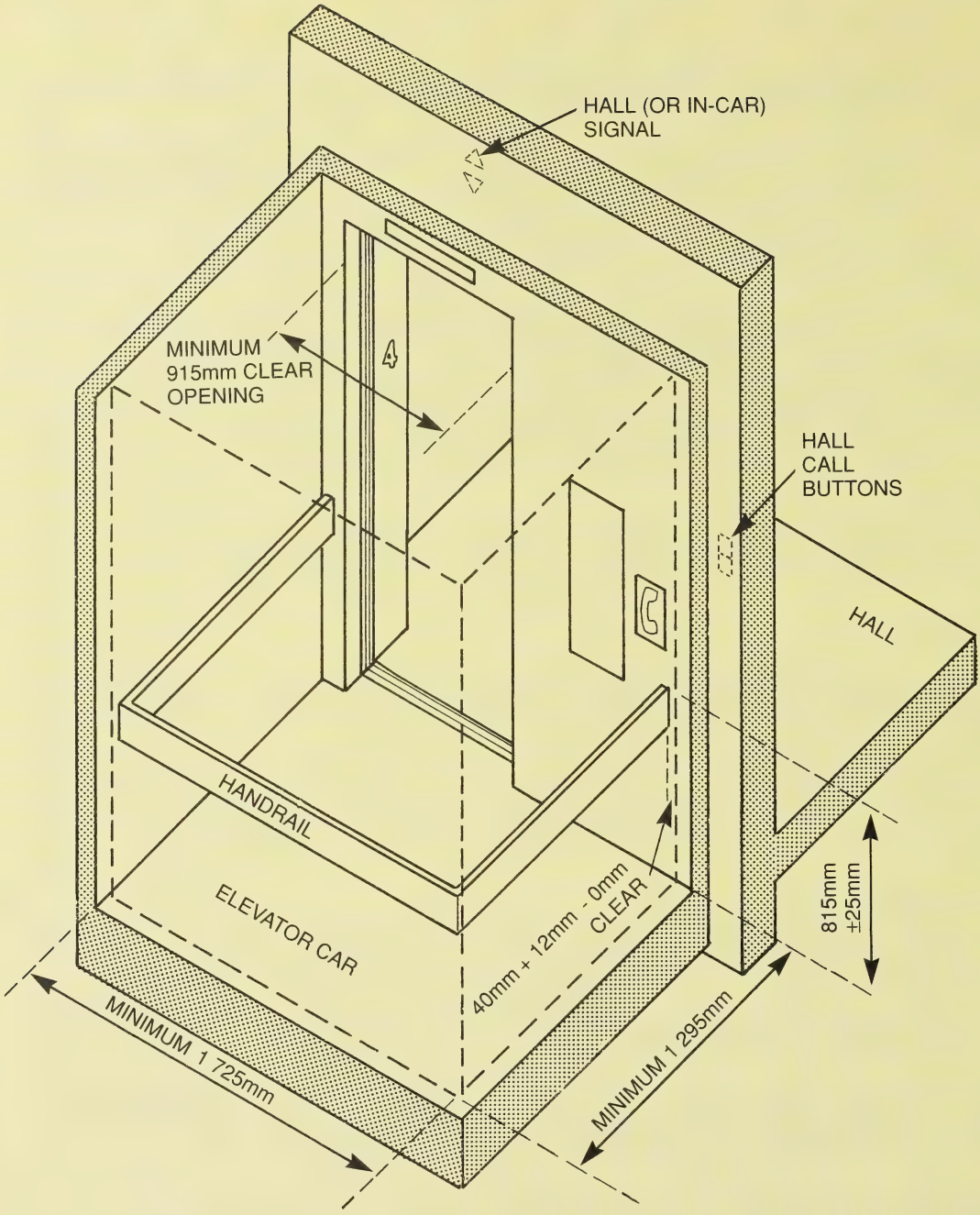
The centre line of the hall call buttons should be 1 065 mm ± 25 mm above the floor. Buttons should be 19 mm in size and should be mounted one above the other.

Visual indication should be provided to show each call registered and extinguished when the call is answered.

Hall lanterns or in-car lanterns should be provided. They should give an audible signal when the elevator stops at a landing. The centre line of the fixture should be at least 1 830 mm above the finished floor.

FLOOR DESIGNATIONS

Arabic numerals 40 mm high and raised at least 1 mm should be placed on both sides of the door jambs to identify every floor in a building.



ELEVATOR CAR DIMENSIONS

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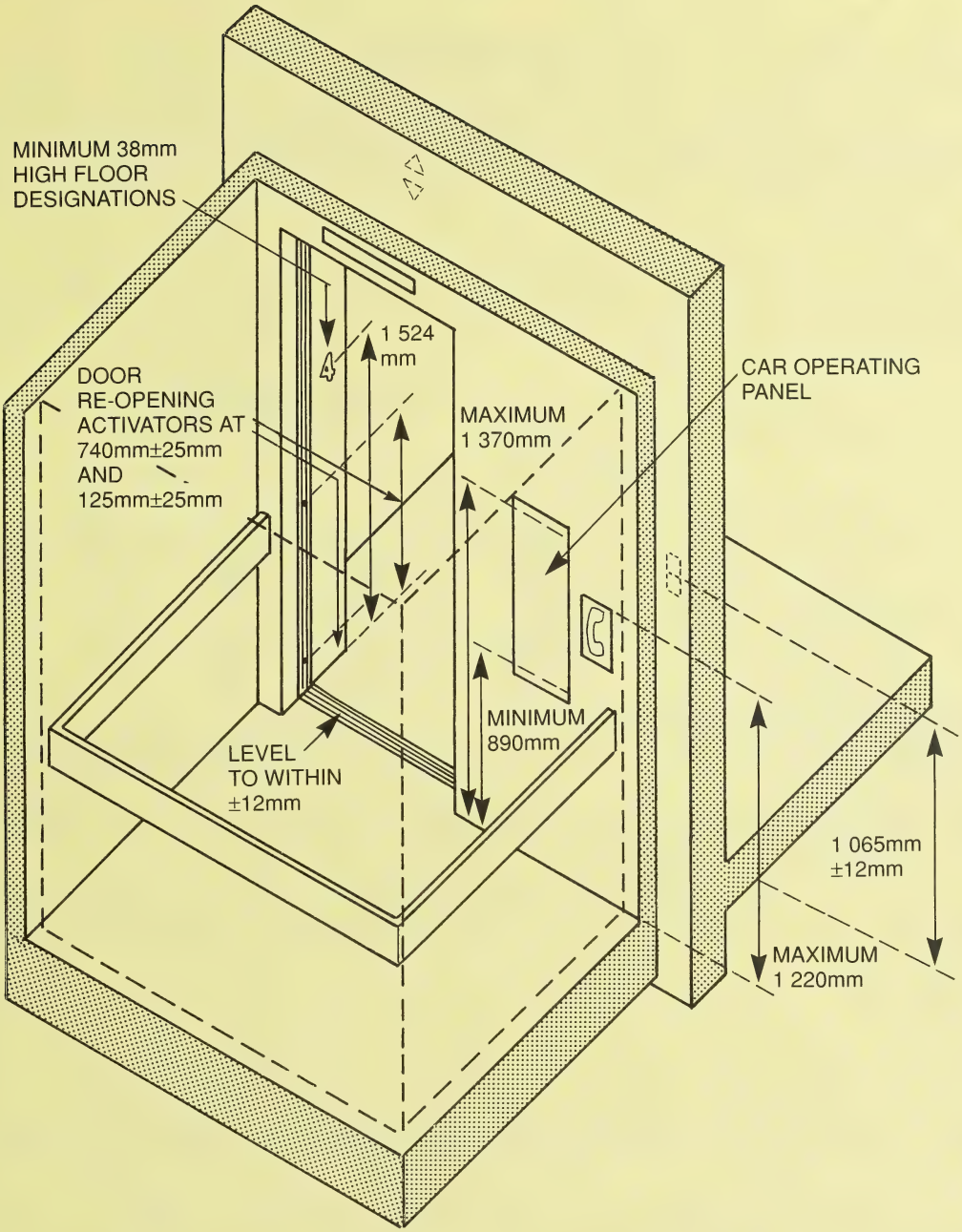

ELEVATOR CAR CONTROLS

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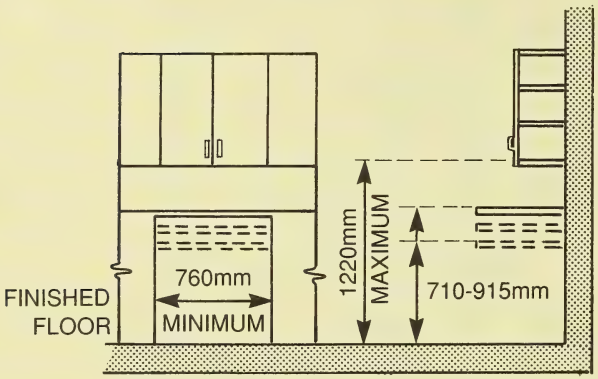
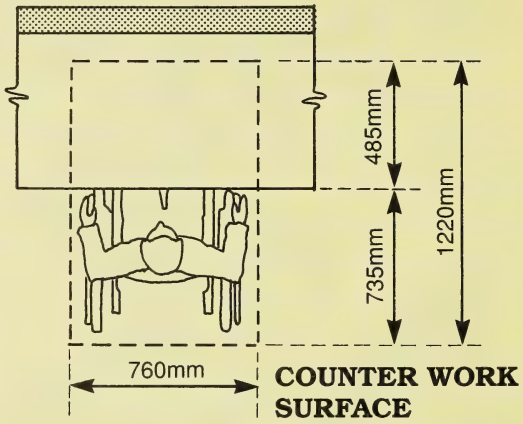
KITCHENS

Accessible kitchens and their components should be on an accessible route. A clear floor space of at least 760 mm x 1 220 mm that allows either a forward or a parallel approach by a person in a wheelchair should be provided at all appliances in the kitchen, including the range, cooktop, oven, refrigerator, dishwasher, etc.

At least one 760 mm section of counter should provide a work surface. The counter should be adjustable or replaceable as a unit at variable heights between 710 mm and 915 mm.



CABINETS



COUNTER WORK SURFACE

Base cabinets, if provided should be removable under the full 760 mm minimum frontage of the counter.

A clear space of 760 mm by 1 220 mm should be provided to allow a forward approach to the counter. The knee space should have a minimum clear width of 760 mm.

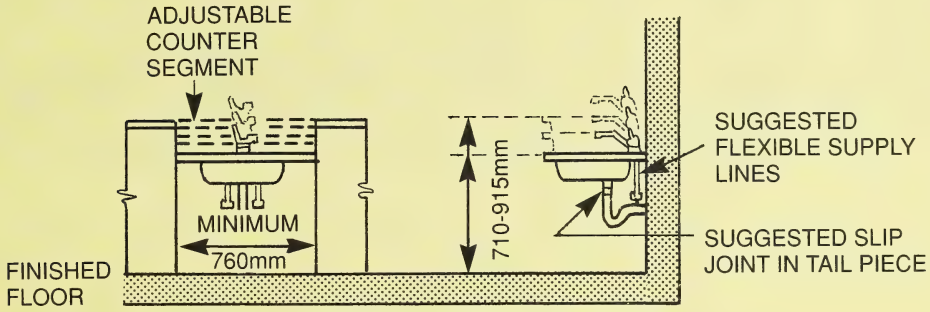
SINK

The sink and surrounding counter should be adjustable or replaceable as a unit at variable heights between 710 mm and 915 mm measured from the top of the counter surface to the finished floor. The depth of sink should not be greater than 165 mm. Lever-operated or push-type faucets are acceptable designs.

Base cabinets, if provided should be removable under the full 760 mm frontage of the sink and surrounding counter.

A clear floor space of 760 mm by 1 220 mm should allow forward approach to the sink. A maximum of 485 mm clear floor space may extend underneath the sink. The knee space should have a minimum clear width of 760 mm.

Hot-water pipes and drain pipes under the sinks should be insulated or otherwise covered.



KITCHEN SINK

OVENS

Ovens should be of a self-cleaning type or be located adjacent to an adjustable height counter with knee space below. For side-opening ovens, the door latch side should be next to the open counter space, and there should be a pull-out shelf under the oven extending the full width of the oven and pulling out not less than 255 mm when fully extended. Ovens should have controls on the front panels, they may be located on either side of the door.

REFRIGERATORS/FREEZERS

Refrigerators/freezers should have at least 50 percent of the freezer space below 1 370 mm above the finished floor, have 100 percent of the refrigerator space and controls below 1 370 mm.

DISHWASHERS

Dishwashers should have all rack space accessible from the front of the machine for loading and unloading dishes.

KITCHEN STORAGE

Cabinets, drawers and shelf storage areas should have the following features:

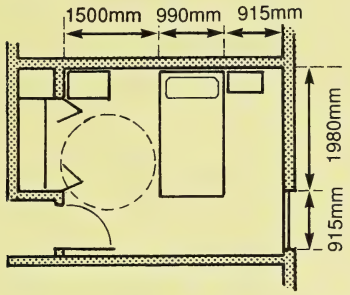
- maximum height should be 1 220 mm for at least one shelf of all cabinets and storage shelves mounted above work counters.
- door pulls or handles for wall cabinets should be mounted as close to the top of cabinet doors as possible.

LAUNDRY

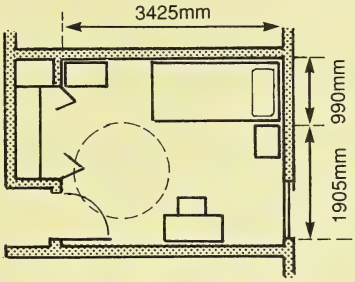
If laundry equipment is provided within individual accessible dwelling units, or if separate laundry facilities serve one or more accessible dwelling units, they should be on an accessible route and be of front loading type.

SUGGESTED BEDROOM LAYOUT

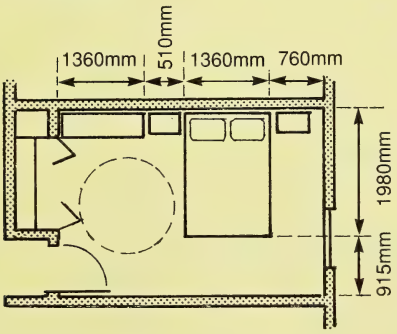
Suggested dimensions and clearances for a one-person bedroom



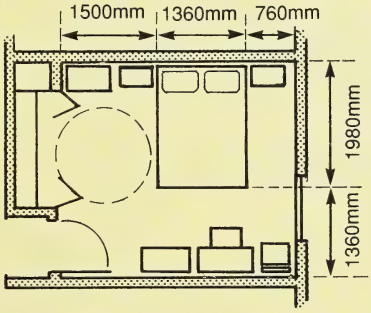
Alternate furniture arrangement for the same bedroom



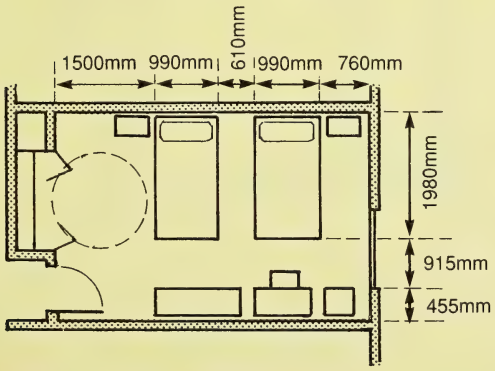
Bedroom for two persons in double bed



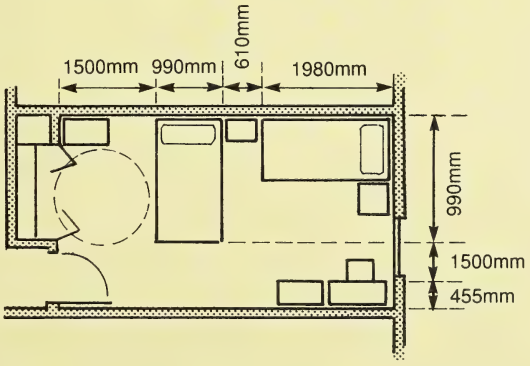
Bedroom for two persons in double bed – preferred room shape



Bedroom for two persons, including one handicapped person in a twin bed



Bedroom for two handicapped persons in twin beds



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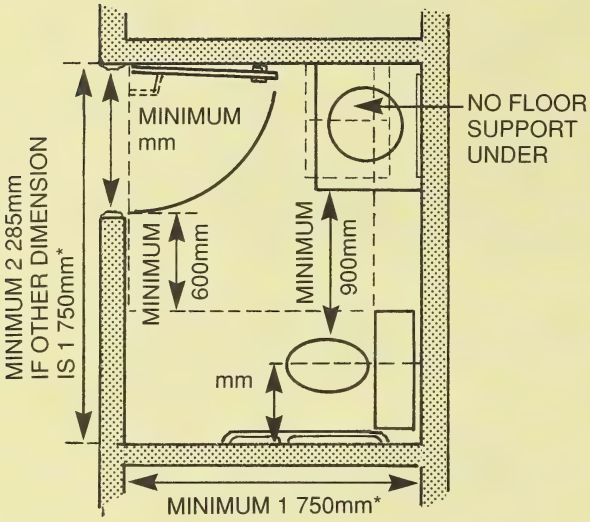
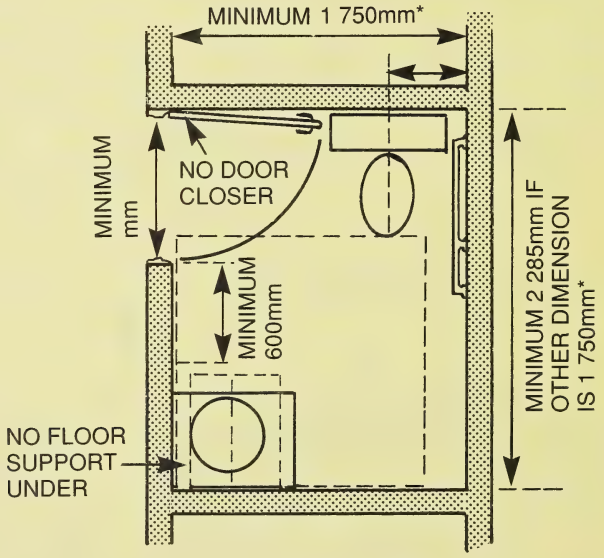
SUGGESTED TOILET ROOM LAYOUT



*MINIMUM FLOOR AREA 4.0m² WITH
NO DIMENSION LESS THAN 1 750mm



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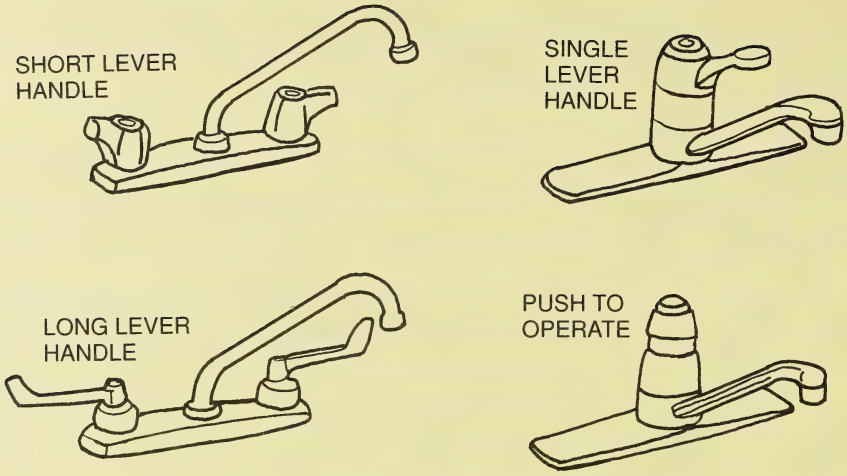
Doors which swing out are a potential hazard for persons with limited vision and should, therefore, be placed in locations where they will swing open against a wall, and where they will not hinder movement by others.

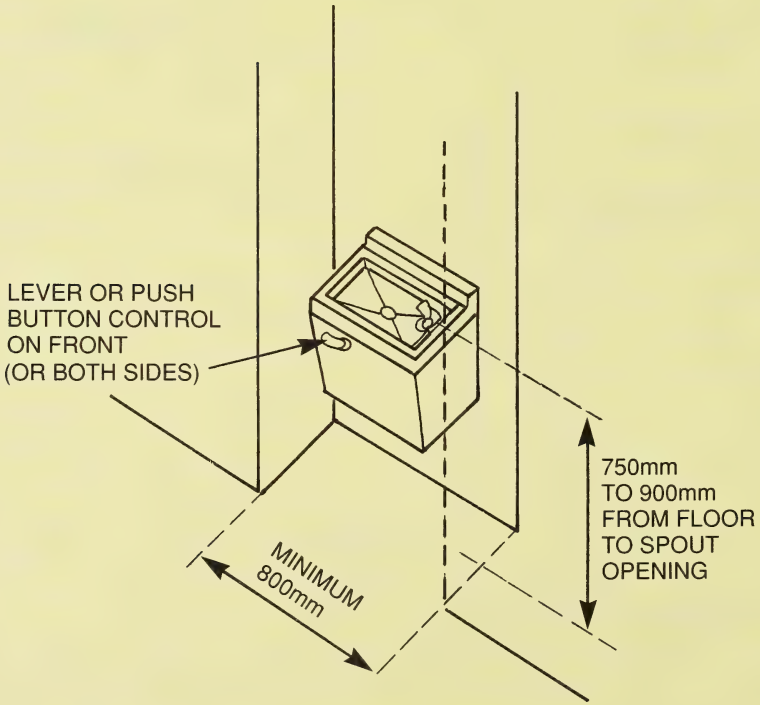
Commercially available drinking fountains having two spouts at varying heights are ideally suited both for people in wheelchairs and people who find it difficult or awkward to bend down. One spout must be not more than 900 mm high, the recommended height for the higher spout is 1 050 mm, measured from the floor.

Faucets are to be conventional one-quarter turn, lever operated push type and automatically controlled mechanism are examples of acceptable designs. Self-closing valves are allowed if the faucet remains open for at least 10 seconds.

Faucet operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate controls shall be not greater than 22.2 N.



FAUCETS



DRINKING FOUNTAIN

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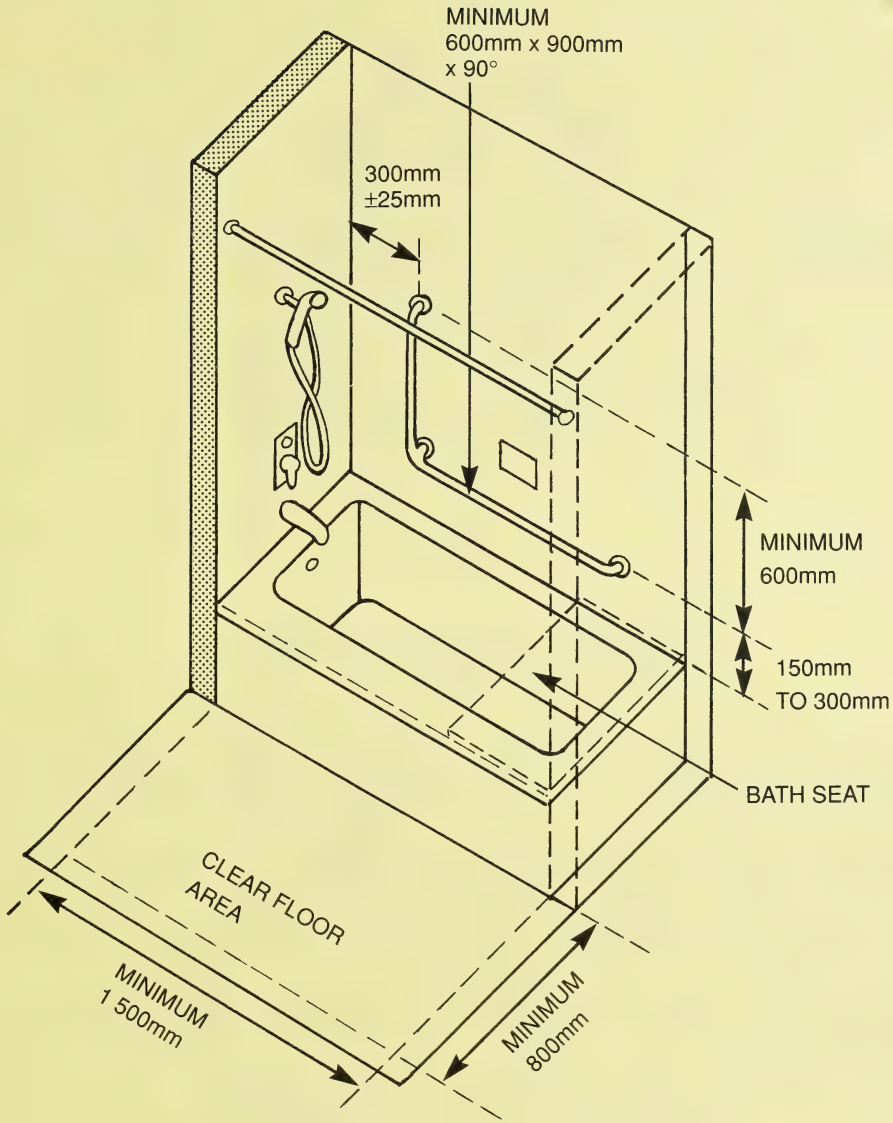
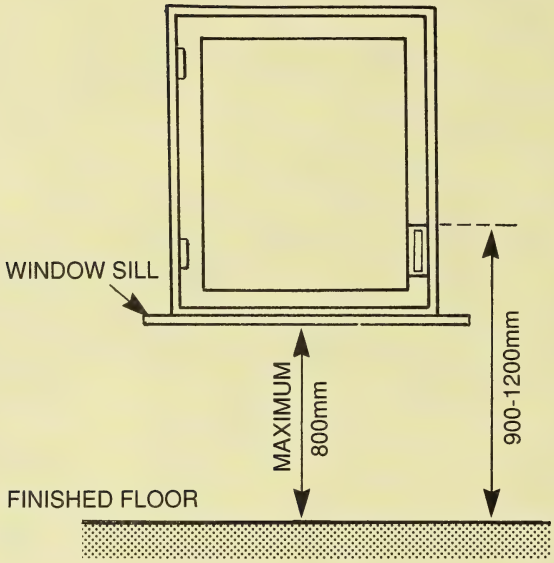


BATH

A clear floor space of at least 800 mm by 1500 mm shall be provided in front of the bath tub. An in-tub bath seat shall be provided. The bath seat shall be mounted securely and shall not slip during use. Grab bars shall be installed within the range of heights as shown. A shower spray unit shall be provided with a hose at least 1525 mm long that can be used as a fixed shower head or as a hand-held shower.

WINDOWS



Windows should be designed to avoid the glare which is a particular problem for people with impaired vision. Large glass area close to circulation space should be marked a little below eye-level with a coloured band or frame.

To enable wheelchair user to see through a window comfortably, the sill should be not higher than 800 mm from the floor.

Windows should be easy to open and close. Their controls should be placed in the zone 900 mm to 1 200 mm from the floor.

For windows which have glass area below 800 mm from the finished floor, appropriate guards should be installed so as to protect the glass from being hit by the wheelchair.

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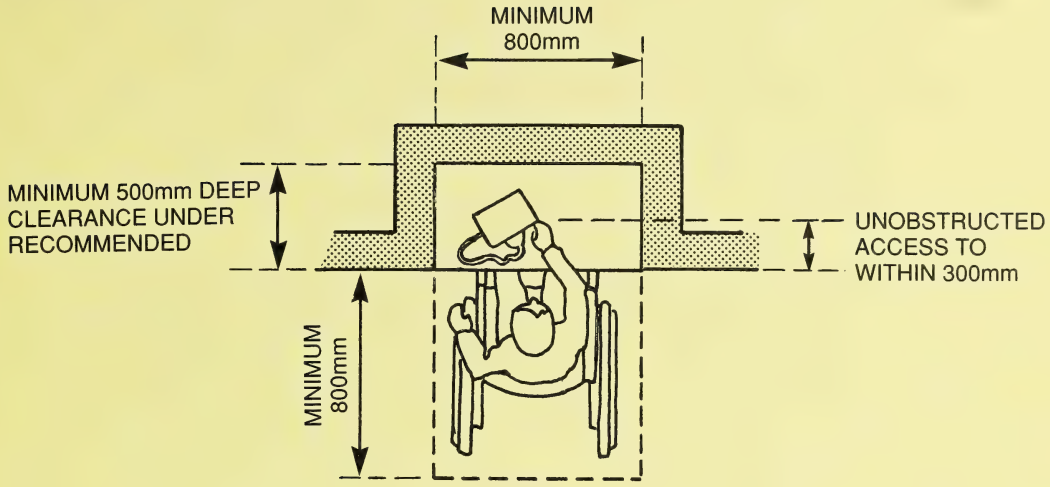

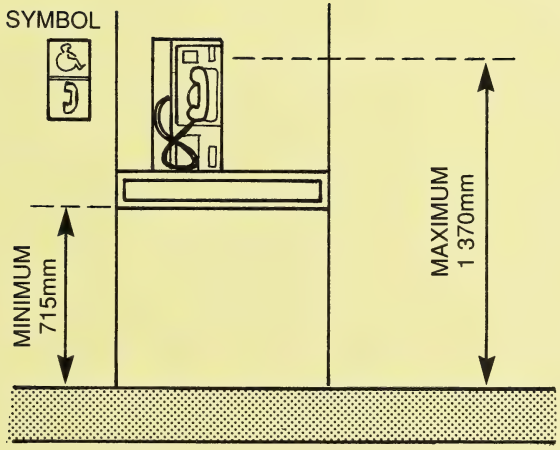

PUBLIC TELEPHONE

Clear floor spaces at each accessible public telephone shall be at least 800 mm and shall allow a forward or parallel approach by a person using a wheelchair. Accessible telephones shall have push button controls where service for such equipment is available. Accessible telephones shall be equipped with a minimum handset cord length of 735 mm.